Data Usability Report (DUR)
Delphi, Dort Highway Sampling Event – May 2002 Sampling Event
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Group # 2E08128

Analytical results for five (5) solid samples and eighteen (18) water samples were reviewed to evaluate the data usability. These data were assessed in accordance with guidance from the United States Environmental Protection Agency (USEPA) **National Functional Guidelines for Organic Data Review** (EPA PB99-993506), **National Functional Guidelines for Inorganic Data Review** (EPA PB94-963502), and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996.

This DUR pertains to the following samples:

0713-050702-0909	0713-050802-0001	0713-050902-0001	0713-050902-0003
0713-050702-1440	0713-050802-1420	0713-050902-1025	0713-050902-0004
0713-050702-1708	0713-050802-1455	0713-050902-1100	0713-050902-1615
0713-050802-0930	0713-050802-1650	0713-050902-1300	0713-050902-1705
0713-050802-1100	0713-050802-1810	0713-050902-1355	0713-050902-0002
	0713-050802-0002	0713-050902-0005	0713-050902-1845
		0713-050902-0006	0713-050902-1925

Project samples were analyzed according to the following analytical methods:

Parameter	**Analytical Method**
Total Organic Carbon	MSA Walkley-Black
Total Residue as Percent Solids	MCAWW 160.3 MOD
Volatile Organic Compounds by GC/MS	SW846 8260B

References:

MCAWW – "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.
SW846 – "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", 3rd Edition, November 1986 and its updates.

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- ❑ Holding Times
- ❑ GC/MS Instrument Performance Check
- ❑ Initial Calibration
- ❑ Continuing Calibration
- ❑ Blanks
- ❑ System Monitoring Compounds
- ❑ Laboratory Control Samples, Matrix Spikes/Matrix Spike Duplicates
- ❑ Internal Standards
- ❑ Sample Data Reporting Format
- ❑ Data Qualifiers
- ❑ Summary

Holding Times

Analytical Method	Holding Time Criteria
Total Organic Carbon, MSA Walkley-Black	28 days analysis
Total Residue as Percent Solids, MCAWW 160.3 MOD	28 days analysis
Volatile Organic Compounds by GC/MS, SW846 8260B	14 days analysis

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group.

GC/MS Instrument Performance Check

GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception.

Initial Calibration

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols: target compound(s) must exhibit a percent relative standard deviation (%RSD) less than the acceptance criteria of 30%.

During the analysis of volatile organics, the initial calibration standards for the following target compound(s) exhibited a %RSD greater than the accepted guidance criteria of 30%:

Inst	Date	Compound	Affected Samples	Qualifier
10	5/7	Acetone, 33.5	All project samples analyzed by Method 8260B	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.

Continuing Calibration

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols: the continuing calibration verification (CCV) standards for the target compound(s) must exhibit a percent drift (%D) less than the acceptance criteria of 20%:

During the analysis of volatile organics, the continuing calibration verification standards for the following target compound(s) exhibited a %D greater than the accepted guidance criteria of 25%:

Inst	Date	Compound	Affected Samples	Qualifier
10	5/15	Acetone, 28.8	0713-050802-0001 0713-050802-1420 0713-050802-1455 0713-050802-1650 0713-050802-1810 0713-050802-0002	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.

10	5/16	Acetone, 35.7 2-Butanone, 30.9	0713-050902-0001 0713-050902-1025 0713-050902-1100 0713-050902-1300 0713-050902-1355/0005/0006 0713-050902-0003 0713-050902-0004 0713-050902-1615 0713-050902-1705 0713-050902-0002 0713-050902-1845 0713-050902-1925	

Blanks

Target compounds were not detected in associated blanks (trip, equipment, method) prepared and analyzed concurrently with the project samples, with the following exceptions (Positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the common laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds.):

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
0713-050802-0002 (Equip. Blank)	Acetone 1,4-Dichlorobenzene Toluene	0.65 0.27 0.30	0713-050802-0930 0713-050802-1100 0713-050802-0001 0713-050802-1420 0713-050802-1455 0713-050802-1650 0713-050802-1810	6.5 ppb 1.35 ppb 1.5 ppb
0713-050902-0001 (Trip Blank)	Methylene Chloride	0.74	0713-050902-1025 0713-050902-1100 0713-050902-1300 0713-050902-1355/0005/0006 0713-050902-0003 0713-050902-0004 0713-050902-1615 0713-050902-1705 0713-050902-0002 0713-050902-1845 0713-050902-1925	7.4 ppb
0713-050902-0003 (Field Blank)	Acetone 1,2-Dichlorobenzene 1,4-Dichlorobenzene Methylene Chloride Toluene	0.52 0.13 0.29 0.74 0.32	0713-050902-0001 0713-050902-1025 0713-050902-1100 0713-050902-1300 0713-050902-1355/0005/0006 0713-050902-0004 0713-050902-1615	5.2 ppb 0.65 ppb 1.45 ppb 7.4 ppb 1.6 ppb

			0713-050902-1705 0713-050902-0002 0713-050902-1845 0713-050902-1925	
0713-050902-0002 (Equip. Blank)	1,4-Dichlorobenzene Methylene Chloride Toluene	0.27 0.79 0.32	0713-050902-0001 0713-050902-1025 0713-050902-1100 0713-050902-1300 0713-050902- 1355/0005/0006 0713-050902-0003 0713-050902-0004 0713-050902-1615 0713-050902-1705 0713-050902-1845 0713-050902-1925	1.35 ppb 7.9 ppb 1.6 ppb

System Monitoring Compounds

System monitoring/surrogate compounds were added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C and 8082 to confirm the efficiency of the sample preparation procedures. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. The calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts required dilution prior to analysis in an effort by the laboratory to either improve instrument performance by minimizing matrix interference or enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results of the surrogate compounds with "DIL" indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. In each case, the elevated reporting limits were confirmed for the level of dilution. No corrective action is required.

Laboratory Control Samples, Matrix Spikes/Matrix Spike Duplicates

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS and LCS analyses fell within the laboratory QA acceptance criteria. No qualification of the data is recommended.

Internal Standards

Internal Standard compounds were added to each sample matrix prior to the analysis of organic parameters by EPA Methods 8260B, and 8270C to quantify the amount of the target compounds detected within each sample. The calculated response of each IS compound fell within the QA/QC criteria of +100% and – 50% of the corresponding CCV standard.

Sample Data Reporting Format

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format including Forms I through IX. The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting limit values for the diluted analyses were adjusted for the level of dilution performed and the percent moisture content in solid matrices. The reporting format is complete and compliant with the objectives of the project, no corrective action is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target compounds detected below the reporting limit but above the method detection limit, and/or when target compounds were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of these data is 100% with the few exceptions noted above.

G:49017/Laboratory/Data Validation/Final_DURs/SDG#:2E08128.doc

Data Usability Report (DUR)
Delphi, Dort Highway – May 2002 Sampling Event
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Group # A2E150243

Analytical results for eleven (11) solid samples and nine (9) water samples were reviewed to evaluate the data usability. These data were assessed in accordance with guidance from the United States Environmental Protection Agency (USEPA) **National Functional Guidelines for Organic Data Review** (EPA PB99-993506), **National Functional Guidelines for Inorganic Data Review** (EPA PB94-963502), and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996.

This DUR pertains to the following samples:

0722-051302-0001	0713-051302-1200	0713-051302-1900	0722-051302-1438
0766-051302-0001	0713-051302-1600	0722-051302-1130	0722-051302-1601
0766-051302-0002	0713-051302-1650	0722-051302-1150	0766-051302-0945
0713-051302-0001	0713-051302-1805	0722-051302-1227	0766-051302-1020
0713-051302-1030	0713-051302-0002	0722-051302-1253	0766-051302-1145

Project samples were analyzed according to the following analytical methods:

Parameter	**Analytical Method**
Cyanide, Total	SW846 9012A
Inductively Coupled Plasma (ICP) Metals	SW846 6010B
Mercury in Liquid Waste (Manual Cold Vapor)	SW846 7470A
Mercury in Solid Waste (Manual Cold Vapor)	Sw846 7471A
Polychlorinated Biphenyls	SW846 8082
Semivolatile Organic Compounds by GC/MS	SW846 8270C
Total Organic Carbon	MSA Walkley-Black
Total Residue as Percent Solids	MCAWW 160.3 MOD
Volatile Organic Compounds by GC/MS	SW846 8260B

References:

MCAWW – "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.
MSA – "Methods of Soil Analysis, Chemical and Microbiological Properties", Part 2, 2nd Edition., 1982 and subsequent rev.
SW846 – "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", 3rd Edition, November 1986 and its updates.

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- ❑ Holding Times
- ❑ GC/MS Instrument Performance Check
- ❑ Initial Calibration
- ❑ Continuing Calibration
- ❑ Blanks
- ❑ System Monitoring Compounds
- ❑ Laboratory Control Samples, Matrix Spikes/Matrix Spike Duplicates
- ❑ Internal Standards
- ❑ ICP Interference Check Sample Performance
- ❑ ICP Serial Dilution Replicate Percent Difference
- ❑ Sample Data Reporting Format
- ❑ Data Qualifiers
- ❑ Summary

Holding Times

Analytical Method	Holding Time Criteria
Cyanide, Total, SW846 9012A	14 days
Inductively Coupled Plasma (ICP) Metals, SW846 6010B	180 days
Mercury in Liquid Waste (Manual Cold Vapor), SW846 7470A	28 days analysis
Mercury in Solid Waste (Manual Cold Vapor), SW846 7471A	28 days analysis
Polychlorinated Biphenyls, SW846 8082	7 days extraction, 40 days analysis
Semivolatile Organic Compounds by GC/MS, SW846 8270C	7 days extraction, 40 days analysis
Total Organic Carbon, MSA Walkley-Black	28 days analysis
Total Residue as Percent Solids, MCAWW 160.3 MOD	28 days analysis
Volatile Organic Compounds by GC/MS, SW846 8260B	14 days

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group.

GC/MS Instrument Performance Check

GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception.

Initial Calibration

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols.

Continuing Calibration

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of volatile organic compounds (SW846 8260B), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 25%:

Inst.	Date	Target Analyte, %D	Associated Samples	Corrective Action
7	5/20	2-Hexanone, 26.4%	0722-051302-0001 0766-051302-0001 0766-051302-0002 0713-051302-0001 0713-051302-1600 0713-051302-1650 0713-051302-1805 0713-051302-0002 0713-051302-1900	Flag “UJ” where the target analyte was non-detect and flag “J” for concentrations detected above the reporting limit.

12	5/20	Acetone, 39.2% Methyl acetate, -26.3%	0722-051302-1130 0722-051302-1150 0722-051302-1227 0722-051302-1253 0722-051302-1438 0722-051302-1601 0766-051302-0945 0766-051302-1020 0766-051302-1145	

Blanks

Target compounds were not detected in associated blanks (trip, equipment, method) prepared and analyzed concurrently with the project samples, with the following exceptions (Positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the common laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds.):

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank (5/20, Inst. 7)	Acetone 1,2,4-Trichlorobenzene	1.7 µg/L 0.49 µg/L	0713-051302-1600 0713-051302-1650 0713-051302-1805 0713-051302-1900	17 µg/L 2.45 µg/L
Method Blank (5/20, Inst. 12)	Acetone	560 µg/kg	0722-051302-1130 0722-051302-1150 0722-051302-1227 0722-051302-1253 0722-051302-1438 0722-051302-1601 0766-051302-0945 0766-051302-1020 0766-051302-1145	5600 µg/kg
Method Blank (solid)	Potassium	28.7 mg/kg	0722-051302-1130 0722-051302-1150 0722-051302-1227 0722-051302-1253 0722-051302-1438 0722-051302-1601 0766-051302-0945 0766-051302-1020 0766-051302-1145	143.5 mg/kg
Method Blank (aqueous)	Mercury Antimony Magnesium Potassium	0.074µg/L 3.0 µg/L 92.0 µg/L 260 µg/L	0766-051302-0002	0.37 µg/L 15 µg/L 460 µg/L 1300 µg/L
0766-051302-0001 (Trip Blank)	Acetone	1.4 µg/L	0766-051302-0002	14 µg/L
0766-051302-0002 (Equip. Blank)	Acetone 2-Butanone Carbon Disulfide	4.5 µg/L 0.55 µg/L 1.1 µg/L	0766-051302-1020 0766-051302-1145	45 µg/L 5.5 µg/L 5.5 µg/L
0713-051302-0001	Acetone	1.4 µg/L	0713-051302-1600	14 µg/L

(Trip Blank)			0713-051302-1650 0713-051302-1805 0713-051302-1900	
0713-051302-0002 (Equip. Blank)	Acetone 2-Butanone 1,2-Dichlorobenzene 1,4-Dichlorobenzene Toluene 1,2,4-Trichlorobenzene	3.0 µg/L 0.54 µg/L 0.16 µg/L 0.37 µg/L 0.32 µg/L 0.36 µg/L	0713-051302-1600 0713-051302-1650 0713-051302-1805 0713-051302-1900	30 µg/L 5.4 µg/L 0.8 µg/L 1.85 µg/L 1.6 µg/L 1.8 µg/L
0766-051302-0002 (Equip. Blank)	Di-n-butylphthalate	1.2 µg/L	0766-051302-0945 0766-051302-1020 0766-051302-1145	12 µg/L

System Monitoring Compounds

System monitoring/surrogate compounds were added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C and 8082 to confirm the efficiency of the sample preparation procedures. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. The calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts required dilution prior to analysis in an effort by the laboratory to either improve instrument performance by minimizing matrix interference or enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results of the surrogate compounds with "DIL" indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. In each case, the elevated reporting limits were confirmed for the level of dilution.

Laboratory Control Samples, Matrix Spikes/Matrix Spike Duplicates

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS/MSD and LCS analyses fell within the laboratory QA acceptance criteria.

Internal Standards

Internal Standard compounds were added to each sample matrix prior to the analysis of organic parameters by EPA Methods 8260B, and 8270C to quantify the amount of the target compounds detected within each sample. The calculated response of each IS compound fell within the QA/QC criteria of +100% and – 50% of the corresponding CCV standard.

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were all within the acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. No qualification of the data is recommended.

ICP Serial Dilution Replicate Percent Difference

The results of the ICP Serial Dilution samples analyzed concurrently with the project samples were within compliance with the USEPA protocol criteria of less than 10% replicate percent difference (RPD) for analytes reported above the IDL in both the diluted and un-diluted sample, with the following exception. Potassium (K) exhibited an RPD of 23.6% for sample 0722-051302-1130. The results for K reported for this sample should be flagged "J" as estimated.

Sample Data Reporting Format

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format including Forms I through IX. The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting limit values for the diluted analyses were adjusted for the level of dilution performed and the percent moisture content in solid matrices. The reporting format is complete and compliant with the objectives of the project, no corrective action is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target compounds detected below the reporting limit but above the method detection limit, and/or when target compounds were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of these data is 100% with the few exceptions noted above.

G:49017/Laboratory/Data Validation/Final_DURs/SDG#:2E150243.doc

Data Usability Report (DUR)
Delphi, Dort Highway – May 2002 Sampling Event
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Group # 2E15254

Analytical results for six (6) solid samples and thirteen (13) water samples were reviewed to evaluate the data usability. These data were assessed in accordance with guidance from the United States Environmental Protection Agency (USEPA) **National Functional Guidelines for Organic Data Review** (EPA PB99-993506), **National Functional Guidelines for Inorganic Data Review** (EPA PB94-963502), and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996.

This DUR pertains to the following samples:

0713-051402-1700	0766-051402-0001	0713-051502-1135	0713-051502-0002
0713-051402-0910	0766-051402-1405	0713-051502-1240	0713-051502-0003
0713-051402-1435	0766-051402-0002	0713-051502-0950	0713-051502-1825
0713-051402-1115	0713-051502-0001	0713-051502-1545	0713-051502-1935
0766-051402-0945	0713-051502-0855	0713-051502-1700	

Project samples were analyzed according to the following analytical methods:

Parameter	**Analytical Method**
Cyanide, Total	SW846 9012A
Inductively Coupled Plasma (ICP) Metals	SW846 6010B
Mercury in Liquid Waste (Manual Cold Vapor)	SW846 7470A
Mercury in Solid Waste (Manual Cold Vapor)	Sw846 7471A
Polychlorinated Biphenyls	SW846 8082
Semivolatile Organic Compounds by GC/MS	SW846 8270C
Total Organic Carbon	MSA Walkley-Black
Total Residue as Percent Solids	MCAWW 160.3 MOD
Volatile Organic Compounds by GC/MS	SW846 8260B

References:

MCAWW – "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.
MSA – "Methods of Soil Analysis, Chemical and Microbiological Properties", Part 2, 2nd Edition., 1982 and subsequent rev.
SW846 – "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", 3rd Edition, November 1986 and its updates.

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- ❑ Holding Times
- ❑ GC/MS Instrument Performance Check
- ❑ Initial Calibration
- ❑ Continuing Calibration
- ❑ Blanks
- ❑ System Monitoring Compounds
- ❑ Laboratory Control Samples, Matrix Spikes/Matrix Spike Duplicates
- ❑ Internal Standards
- ❑ ICP Interference Check Sample Performance
- ❑ ICP Serial Dilution Replicate Percent Difference
- ❑ Sample Data Reporting Format
- ❑ Data Qualifiers
- ❑ Summary

Holding Times

Analytical Method	Holding Time Criteria
Cyanide, Total, SW846 9012A	14 days
Inductively Coupled Plasma (ICP) Metals, SW846 6010B	180 days
Mercury in Liquid Waste (Manual Cold Vapor), SW846 7470A	28 days analysis
Mercury in Solid Waste (Manual Cold Vapor), SW846 7471A	28 days analysis
Polychlorinated Biphenyls, SW846 8082	7 days extraction, 40 days analysis
Semivolatile Organic Compounds by GC/MS, SW846 8270C	7 days extraction, 40 days analysis
Total Organic Carbon, MSA Walkley-Black	28 days analysis
Total Residue as Percent Solids, MCAWW 160.3 MOD	28 days analysis
Volatile Organic Compounds by GC/MS, SW846 8260B	14 days

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group.

GC/MS Instrument Performance Check

GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception.

Initial Calibration

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols with the following exception(s):

During the analysis of volatile organic compounds (SW846 8260B), the initial calibration standards for the following target compound(s) exhibited a percent relative standard deviation (%RSD) greater than the acceptance criteria of 30%:

Inst.	Date	Target Analyte, %RSD	Associated Samples	Corrective Action
10	5/7	Acetone, 33.5%	0713-051502-0001 0713-051502-0855 0713-051502-1135 0713-051502-1240 0713-051502-0950 0713-051502-1545 0713-051502-1700 0713-051502-0002 0713-051502-0003 0713-051502-1825 0713-051502-1935	Flag “UJ” where the target analyte was non-detect and flag “J” for concentrations detected above the reporting limit.

During the analysis of semivolatile organic compounds (SW846 8270C), the initial calibration standards for the following target compound(s) exhibited a percent relative standard deviation (%RSD) greater than the acceptance criteria of 30%:

Inst.	Date	Target Analyte, %RSD	Associated Samples	Corrective Action
6	5/6	Bis-(2-ethylhexyl) phthalate, 37.4%	0766-051402-0002	Flag “UJ” where the target analyte was non-detect and flag “J” for concentrations detected above the reporting limit.

Continuing Calibration

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of volatile organic compounds (SW846 8260B), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 20%:

Inst.	Date	Target Analyte, %D	Associated Samples	Corrective Action
7	5/20	2-Hexanone, 26.4%	0766-051402-0001 0766-051402-0002	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.
10	5/20	Acetone, 26.1% 2-Butanone, 31.5%	0713-051502-0001 0713-051502-0855 0713-051502-1135 0713-051502-1240 0713-051502-0950 0713-051502-1545 0713-051502-1700 0713-051502-0002 0713-051502-0003 0713-051502-1825 0713-051502-1935	
12	5/20	Acetone, 39.2% Methyl acetate, -26.3%	0766-051402-0945 0766-051402-1405	

Blanks

Target compounds were not detected in associated blanks (trip, equipment, method) prepared and analyzed concurrently with the project samples, with the following exceptions (Positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the common laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds.):

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
0766-051402-0001 (Trip Blank)	Acetone	1.5 ppb	0713-051402-1700 0713-051402-0950 0713-051402-1115 0766-051402-0945 0766-051402-1405 0766-051402-0002	15 ppb
0766-051402-0002 (Equip. Blank)	Acetone Chloroform Methylene Chloride	2.8 ppb 1.5 ppb 0.84 ppb	0713-051402-1700 0713-051402-0950 0713-051402-1115 0766-051402-0945 0766-051402-0001 0766-051402-1405	28 ppb 7.5 ppb 8.4 ppb
0713-051502-0003 (Equip. Blank)	Acetone 1,4-Dichlorobenzene Toluene	1.2 ppb 0.33 ppb 0.25 ppb	0713-051502-0001 0713-051502-0855 0713-051502-1135 0713-051502-1240	12 ppb 1.65 ppb 1.25 ppb

			0713-051502-0950 0713-051502-1545 0713-051502-1700 0713-051502-0002 0713-051502-1825 0713-051502-1935	
Method Blank (Inst. 7, 5/20/02)	Acetone 1,2,4-Trichlorobenzene	1.7 ppb 0.49 ppb	0766-051402-0001 0766-051402-0002	17 ppb 2.45 ppb
Method Blank (Inst. 12, 5/20/02)	Acetone	560 mg/kg	0766-051402-0945 0766-051402-1405	5600 mg/kg
0766-051402-0002 (Equip. Blank)	Di-n-butylphthalate	0.86 ppb	0766-051402-0945 0766-051402-1405	4.3 ppb

Mercury (0.000074 ppm), Antimony (0.0030 ppm), Magnesium (0.092 ppm) and Potassium (0.26 ppm) were detected at a concentration above the instrument detection limit (IDL) in the water matrix method blank sample analyzed concurrently with the project samples. The associated sample results were flagged with a "J" indicating method blank contamination. Reported project sample results within 5 X the values detected in the method blank should be flagged with a "U" and not considered representative of site conditions.

Potassium (28.7 mg/kg) was detected at a concentration above the instrument detection limit (IDL) in the solid matrix method blank sample analyzed concurrently with the project samples. The associated sample results were flagged with a "J" indicating method blank contamination. Reported project sample results within 5 X the values detected in the method blank should be flagged with a "U" and not considered representative of site conditions.

Antimony (0.0034 ppm), Calcium (0.32 ppm), Magnesium (0.11 ppm), Manganese (0.0014 ppm) and Potassium (0.30 ppm) were detected at a concentration above the instrument detection limit (IDL) in equipment blank sample, 0766-051402-0945, analyzed concurrently with the project samples. Reported project sample results within 5 X the values detected in the method blank should be flagged with a "U" and not considered representative of site conditions.

System Monitoring Compounds

System monitoring/surrogate compounds were added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C and 8082 to confirm the efficiency of the sample preparation procedures. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. The calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts required dilution prior to analysis in an effort by the laboratory to either improve instrument performance by minimizing matrix interference or enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results of the surrogate compounds with "DIL" indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. In each case, the elevated reporting limits were confirmed for the level of dilution.

Laboratory Control Samples, Matrix Spikes/Matrix Spike Duplicates

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of

a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS and LCS analyses fell within the laboratory QA acceptance criteria.

Internal Standards

Internal Standard compounds were added to each sample matrix prior to the analysis of organic parameters by EPA Methods 8260B, and 8270C to quantify the amount of the target compounds detected within each sample. The calculated response of each IS compound fell within the QA/QC criteria of +100% and – 50% of the corresponding CCV standard.

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were all within the acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. No qualification of the data is recommended.

ICP Serial Dilution Replicate Percent Difference

The results of the ICP Serial Dilution samples analyzed concurrently with the project samples were within compliance with the USEPA protocol criteria of less than 10% replicate percent difference (RPD) for analytes reported above the IDL in both the diluted and un-diluted sample. No qualification of the data is recommended.

Sample Data Reporting Format

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format including Forms I through IX. The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting limit values for the diluted analyses were adjusted for the level of dilution performed and the percent moisture content in solid matrices. The reporting format is complete and compliant with the objectives of the project, no corrective action is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target compounds detected below the reporting limit but above the method detection limit, and/or when target compounds were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of these data is 100% with the few exceptions noted above.

Data Usability Report (DUR)
Delphi, Dort Highway Sampling Event – May 2002 Sampling Event
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Group # A2E170262

Analytical results for four (4) solid samples and two (2) water samples were reviewed to evaluate the data usability. These data were assessed in accordance with guidance from the United States Environmental Protection Agency (USEPA) **National Functional Guidelines for Organic Data Review** (EPA PB99-993506), **National Functional Guidelines for Inorganic Data Review** (EPA PB94-963502), and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996.

This DUR pertains to the following samples:

0722-051602-0850	0722-051602-1630	0722-051602-0001
0722-051602-0917	0722-051602-1642	0713-051602-0001

Project samples were analyzed according to the following analytical methods:

Parameter	**Analytical Method**
Cyanide, Total	SW846 9012A
Inductively Coupled Plasma (ICP) Metals	SW846 6010B
Mercury in Liquid Waste (Manual Cold Vapor)	SW846 7470A
Mercury in Solid Waste (Manual Cold Vapor)	SW846 7471A
Polychlorinated Biphenyls	SW846 8082
Semivolatile Organic Compounds by GC/MS	SW846 8270C
Total Residue as Percent Solids	MCAWW 160.3 MOD
Volatile Organic Compounds by GC/MS	SW846 8260B

References:

MCAWW – "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.
SW846 – "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", 3rd Edition, November 1986 and its updates.

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- ❑ Holding Times
- ❑ GC/MS Instrument Performance Check
- ❑ Initial Calibration
- ❑ Continuing Calibration
- ❑ Blanks
- ❑ System Monitoring Compounds
- ❑ Laboratory Control Samples, Matrix Spikes/Matrix Spike Duplicates
- ❑ Internal Standards
- ❑ ICP Interference Check Sample Performance
- ❑ ICP Serial Dilution Replicate Percent Difference
- ❑ Sample Data Reporting Format
- ❑ Data Qualifiers
- ❑ Summary

Holding Times

Analytical Method	Holding Time Criteria
Cyanide, Total, SW846 9012A	14 days
Inductively Coupled Plasma (ICP) Metals, SW846 6010B	180 days
Mercury in Liquid Waste (Manual Cold Vapor), SW846 7470A	28 days analysis
Mercury in Solid Waste (Manual Cold Vapor), SW846 7471A	28 days analysis
Polychlorinated Biphenyls, SW846 8082	5 days extraction, 40 days analysis
Semivolatile Organic Compounds by GC/MS, SW846 8270C	5 days extraction, 40 days analysis
Total Residue as Percent Solids, MCAWW 160.3 MOD	28 days analysis
Volatile Organic Compounds by GC/MS, SW846 8260B	14 days

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group.

GC/MS Instrument Performance Check

GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception.

Initial Calibration

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols with the following exception(s):

During the analysis of volatile organic compounds (SW846 8260B), the initial calibration standards for the following target compound(s) exhibited a percent relative standard deviation (%RSD) greater than the acceptance criteria of 30%:

Inst.	Date	Target Analyte, %RSD	Associated Samples	Corrective Action
8	4/7	Acetone, 78.1% 1,2-Dibromo-3-chloropropane, 43.8%	0722-051602-0850 0722-051602-0917 0722-051602-1630 0722-051602-1642	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.
10	5/7	Acetone, 33.5%	0722-051602-0001 0713-051602-0001	

Continuing Calibration

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of volatile organic compounds (SW846 8260B), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 20%:

Inst.	Date	Target Analyte, %D	Associated Samples	Corrective Action
10	5/22	Acetone, 37.9 2-Butanone, 30.8	0722-051602-0001 0713-051602-0001	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.

During the analysis of semivolatile organic compounds (SW846 8270C), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 20%:

Inst.	Date	Target Analyte, %D	Associated Samples	Corrective Action
7	5/23	3-Nitroaniline, -25.1% 4-Nitroaniline, -27.2%	0722-051602-0850 0722-051602-0917 0722-051602-1630 0722-051602-1642	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.

Blanks

Target compounds were not detected in associated blanks (trip, equipment, method) prepared and analyzed concurrently with the project samples, with the following exceptions (Positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the common laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds.):

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
0713-051602-0001 (Equip. Blank)	Acetone Chloroform	1.1 ppb 5.5 ppb	0722-051602-0850 0722-051602-0917 0722-051602-1630 0722-051602-1642	11.0 ppb 27.5 ppb
Method Blank (5/24, Inst. 8)	Acetone	110 ug/kg	0722-051602-0850 0722-051602-0917 0722-051602-1630 0722-051602-1642	1100 ug/kg
Method Blank (solid)	Aluminum Potassium	2 ug/kg 29.4 ug/kg	0722-051602-0850 0722-051602-0917 0722-051602-1630 0722-051602-1642	10 ug/kg 147 ug/kg
Method Blank (aqueous)	Calcium Manganese Potassium	0.31 mg/L 0.089 mg/L 0.27 mg/L	0722-051602-0001	1.55 mg/L 0.445 mg/L 1.35 mg/L

System Monitoring Compounds

System monitoring/surrogate compounds were added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C and 8082 to confirm the efficiency of the sample preparation procedures. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. The calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts required dilution prior to analysis in an effort by the laboratory to either improve instrument performance by minimizing matrix interference or enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results of the surrogate compounds with "DIL" indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. In each case, the elevated reporting limits were confirmed for the level of dilution.

Laboratory Control Samples, Matrix Spikes/Matrix Spike Duplicates

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS and LCS analyses fell within the laboratory QA acceptance criteria with the following exception(s):

During the analysis of PCBs (SW846 8020), the RPD for Aroclor 1016 in the LCS was outside the acceptance criteria. Arolcors 1016, 1221 and 1232 should be qualified with a "J" for positive results and "UJ" for non-detects in project sample(s): 0722-051602-0850, 0722-051602-0917, 0722-051602-1630, and 0722-051602-1642.

Internal Standards

Internal Standard compounds were added to each sample matrix prior to the analysis of organic parameters by EPA Methods 8260B, and 8270C to quantify the amount of the target compounds detected within each sample. The calculated response of each IS compound fell within the QA/QC criteria of +100% and – 50% of the corresponding CCV standard.

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were all within the acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. No qualification of the data is recommended.

ICP Serial Dilution Replicate Percent Difference

The results of the ICP Serial Dilution samples analyzed concurrently with the project samples were within compliance with the USEPA protocol criteria of less than 10% replicate percent difference (RPD) for analytes reported above the IDL in both the diluted and un-diluted sample. No qualification of the data is recommended.

Sample Data Reporting Format

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format including Forms I through IX. The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting limit values for the diluted analyses were adjusted for the level of dilution performed and the percent moisture content in solid matrices. The reporting format is complete and compliant with the objectives of the project, no corrective action is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target compounds detected below the reporting limit but above the method detection limit, and/or when target compounds were detected in the associated method/preparation blank sample. Based on a spot check of the data

qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of these data is 100% with the few exceptions noted above.

G:/49017/Laboratory/Data Validation/Final_DURs/SDG#:A2E170262.doc

Data Usability Report (DUR)
Delphi, Dort Highway – June 2002 Sampling Event
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Group # 2F12148

Analytical results for eight (8) solid samples and seven (7) water samples were reviewed to evaluate the data usability. These data were assessed in accordance with guidance from the United States Environmental Protection Agency (USEPA) **National Functional Guidelines for Organic Data Review** (EPA PB99-993506), **National Functional Guidelines for Inorganic Data Review** (EPA PB94-963502), and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996.

This DUR pertains to the following samples:

0722-061102-0915	0722-061202-0930	0722-061202-0003
0722-061102-0945	0722-061202-1010	0722-061302-0900/0004/0005
0722-061102-1052	0722-061202-1037	0722-061302-0001
0722-061102-0001	0722-061202-0001	0722-061302-0002
0722-061102-0002	0722-061202-0002	0722-061302-0003

Project samples were analyzed according to the following analytical methods:

Parameter	**Analytical Method**
Cyanide, Total	SW846 9012A
Hexavalent Chromium	SW846 7196A
Inductively Coupled Plasma (ICP) Metals	SW846 6010B
Mercury in Liquid Waste (Manual Cold Vapor)	SW846 7470A
Mercury in Solid Waste (Manual Cold Vapor)	SW846 7471A
Polychlorinated Biphenyls	SW846 8082
Semivolatile Organic Compounds by GC/MS	SW846 8270C
Total Residue as Percent Solids	MCAWW 160.3 MOD
Volatile Organic Compounds by GC/MS	SW846 8260B

References:

MCAWW – "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.
MSA – "Methods of Soil Analysis, Chemical and Microbiological Properties", Part 2, 2nd Edition., 1982 and subsequent rev.
SW846 – "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", 3rd Edition, November 1986 and its updates.

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- ❑ Holding Times
- ❑ GC/MS Instrument Performance Check
- ❑ Initial Calibration
- ❑ Continuing Calibration
- ❑ Blanks
- ❑ System Monitoring Compounds
- ❑ Laboratory Control Samples, Matrix Spikes/Matrix Spike Duplicates
- ❑ Internal Standards
- ❑ ICP Interference Check Sample Performance
- ❑ ICP Serial Dilution Replicate Percent Difference
- ❑ Sample Data Reporting Format
- ❑ Data Qualifiers
- ❑ Summary

Holding Times

Analytical Method	Holding Time Criteria
Cyanide, Total, SW846 9012A	14 days
Hexavalent Chromium, SW846 7196A	24 hours
Inductively Coupled Plasma (ICP) Metals, SW846 6010B	180 days
Mercury in Liquid Waste (Manual Cold Vapor), SW846 7470A	28 days analysis
Mercury in Solid Waste (Manual Cold Vapor), SW846 7471A	28 days analysis
Polychlorinated Biphenyls, SW846 8082	7 days extraction, 40 days analysis
Semivolatile Organic Compounds by GC/MS, SW846 8270C	7 days extraction, 40 days analysis
Total Residue as Percent Solids, MCAWW 160.3 MOD	28 days analysis
Volatile Organic Compounds by GC/MS, SW846 8260B	14 days

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group.

GC/MS Instrument Performance Check

GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception.

Initial Calibration

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exceptions:

During the analysis of volatile organic compounds (SW846 8260B), the initial calibration standards for the following target compound(s) exhibited a percent relative standard deviation (%RSD) greater than the acceptance criteria of 30%:

Inst.	Date	Target Analyte, %D	Associated Samples	Corrective Action
8	4/8	Acetone, 78.1% 1,2-Dibromo-3-chloropropane, 43.8%	0722-061102-0915 0722-061102-0945 0722-061102-1052	Flag “UJ” where the target analyte was non-detect and flag “J” for concentrations detected above the reporting limit.
8	6/21	Acetone, 51.4% Bromomethane, 40.5% Methylene chloride, 64.2%	0722-061202-0930 0722-061202-1010 0722-061202-1037 0722-061302-0900/0004/0005 0722-061302-0003	

Continuing Calibration

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of volatile organic compounds (SW846 8260B), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 25%:

Inst.	Date	Target Analyte, %D	Associated Samples	Corrective Action
8	6/20	Dichlorodifluoromethane, 30.9%	0722-061102-0915 0722-061102-0945 0722-061102-1052	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.
8	6/21	Bromomethane, 35.8%	0722-061202-0930 0722-061202-1010 0722-061202-1037	
8	6/24	Dichlorodifluoromethane, 36.3% Chloroethane, 34.6% Acetone, -32.3% Bromomethane, 49.3%	0722-061302- 0900/0004/0005 0722-061302-0003	
10	6/18	Acetone, 25.7% Carbon tetrachloride, 36.0% Dichlorodifluoromethane, 37.4% Trichlorofluoromethane, 32.5%	0722-061202-0001 0722-061202-0002 0722-061202-0003	
10	6/19	Dichlorodifluoromethane, 27.7% Trichlorofluoromethane, 28.3%	0722-061302-0001 0722-061302-0002	
12	6/14	Chloromethane, 25.4% Acetone, 36.5%	0722-061102-0001 0722-061102-0002	

Blanks

Target compounds were not detected in associated blanks (trip, equipment, method) prepared and analyzed concurrently with the project samples, with the following exceptions (Positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the common laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds.):

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
0722-061102-0002 (Equip. Blank)	Chloroform	7.2 ppb	0722-061102-0915 0722-061102-0945 0722-061102-1052	36 ppb
0722-061202-0001 (Trip Blank)	1,1-Dichloroethene	0.44 ppb	0722-061202-0930 0722-061202-1010 0722-061202-1037	2.2 ppb
0722-061202-0002 (Equip. Blank)	Chloroform	7.0 ppb	0722-061202-0930 0722-061202-1010 0722-061202-1037	35 ppb
0722-061202-0003 (Field Blank)	Chloroform	5.3 ppb	0722-061202-0930 0722-061202-1010 0722-061202-1037	26.5 ppb
0722-061302-0001 (Trip Blank)	1,1-Dichloroethene	0.49 ppb	0722-061302- 0900/0004/0005 0722-061302-0003	2.45 ppb
0722-061302-0002 (Equip. Blank)	Chloroform Chloromethane	6.8 ppb 0.22 ppb	0722-061302- 0900/0004/0005 0722-061302-0003	34 ppb 1.1 ppb
Method Blank (6/14, Inst. 8)	Acetone Methylene chloride Toluene	200 µg/kg 99 µg/kg 24 µg/kg	0722-061102-0001 0722-061102-0002	2000 µg/kg 990 µg/kg 120 µg/kg

Method Blank (6/21, Inst. 8)	Acetone 2-Butanone Styrene	430 µg/kg 97 µg/kg 27 µg/kg	0722-061102-0915 0722-061102-0945 0722-061102-1052 0722-061202-0930 0722-061202-1010 0722-061202-1037 0722-061202-0900 0722-061202-0004 0722-061202-0005	4300 µg/kg 970 µg/kg 135 µg/kg
Method Blank (6/18, Inst. 10)	Methylene chloride	0.71 µg/L	0722-061202-0001 0722-061202-0002 0722-061202-0003 0722-061302-0001 0722-061302-0002	7.1 µg/L
Method Blank (6/25, Inst. 8)	Bis (2-Ethylhexyl) phthalate	120 µg/kg	0722-061102-0002 0722-061102-0915 0722-061102-0945 0722-061202-1052 0722-061202-1010 0722-061202-1037	1200 µg/kg
Method Blank (solid)	Barium Calcium Copper Magnesium Manganese Potassium	0.18 mg/kg 25.1 mg/kg 0.15 mg/kg 9.0 mg/kg 0.16 mg/kg 29.7 mg/kg	0722-061102-0915 0722-061102-0945 0722-061102-1052	0.9 mg/kg 125.5 mg/kg 1.5 mg/kg 45.0 mg/kg 0.8 mg/kg 148.5 mg/kg
Method Blank (solid)	Barium Calcium Magnesium Manganese Potassium	0.33 mg/kg 33.9 mg/kg 11.1 mg/kg 0.097 mg/kg 28.3 mg/kg	0722-061202-0930 0722-061202-1010 0722-061202-1037 0722-061302-0900 0722-061302-0004 0722-061302-0005 0722-061302-0003	1.65 mg/kg 169.5 mg/kg 55.5 mg/kg 0.485 mg/kg 141.5 mg/kg
Method Blank (aqueous)	Barium Calcium Magnesium Manganese Potassium	0.0013 mg/L 0.21 mg/L 0.082 mg/L 0.0011 mg/L 0.26 mg/L	0722-061102-0002 0722-061302-0002	0.0065 mg/L 1.05 mg/L 0.41 mg/L 0.0055 mg/L 1.3 mg/L
Method Blank (aqueous)	Calcium Magnesium Manganese Potassium	0.32 mg/L 0.11 mg/L 0.0010 mg/L 0.26 mg/L	0722-061202-0002	1.6 mg/L 0.55 mg/L 0.0050 mg/L 1.3 mg/L

System Monitoring Compounds

System monitoring/surrogate compounds were added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C and 8082 to confirm the efficiency of the sample preparation procedures. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. The calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts required dilution prior to analysis in an effort by the laboratory to either improve instrument performance by minimizing matrix interference or enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results of the surrogate compounds with “DIL” indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution. In cases where

the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. In each case, the elevated reporting limits were confirmed for the level of dilution.

Laboratory Control Samples, Matrix Spikes/Matrix Spike Duplicates

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS/MSD and LCS analyses fell within the laboratory QA acceptance criteria.

Internal Standards

Internal Standard compounds were added to each sample matrix prior to the analysis of organic parameters by EPA Methods 8260B, and 8270C to quantify the amount of the target compounds detected within each sample. The calculated response of each IS compound fell within the QA/QC criteria of +100% and – 50% of the corresponding CCV standard.

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were all within the acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. No qualification of the data is recommended.

ICP Serial Dilution Replicate Percent Difference

The results of the ICP Serial Dilution samples analyzed concurrently with the project samples were within compliance with the USEPA protocol criteria of less than 10% replicate percent difference (RPD) for analytes reported above the IDL in both the diluted and un-diluted sample, with the following exception. Zinc (Zn) exhibited a RPD of 28.6% for sample 0722-061202-0930. The results for Zn reported for this sample should be flagged “J” as estimated.

Sample Data Reporting Format

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format including Forms I through IX. The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting limit values for the diluted analyses were adjusted for the level of dilution performed and the percent moisture content in solid matrices. The reporting format is complete and compliant with the objectives of the project, no corrective action is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target compounds detected below the reporting limit but above the method detection limit, and/or when target compounds were detected in the associated method/preparation blank sample. Based on a spot check of the data

qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of these data is 100% with the few exceptions noted above.

G:/49017/Laboratory/Data Validation/Final_DURs/SDG#:2F12148.doc

Data Usability Report (DUR)
Delphi, Dort Highway – June 2002 Sampling Event
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Group # 2F20241

Analytical results for twenty (20) water samples were reviewed to evaluate the data usability. These data were assessed in accordance with guidance from the United States Environmental Protection Agency (USEPA) **National Functional Guidelines for Organic Data Review** (EPA PB99-993506), **National Functional Guidelines for Inorganic Data Review** (EPA PB94-963502), and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996.

This DUR pertains to the following samples:

0713-061902-0001	0713-062002-0950	0713-062102-1030	0713-062402-1245
0713-061902-1640	0713-062002-1200	0713-062102-1225	0713-062402-0002
0713-061902-0002	0713-062002-1425	0713-062102-0001	0713-062402-1450
0713-061902-1025	0713-062002-0001	0713-062102-0002	0713-062402-0003
0713-061902-1420	0713-062002-0002		0713-062402-1655
			0713-062402-0004

Project samples were analyzed according to the following analytical methods:

Parameter	**Analytical Method**
Cyanide, Total	SW846 9012A
Inductively Coupled Plasma (ICP) Metals	SW846 6010B
ICP-MS	SW846 6020
Mercury in Liquid Waste (Manual Cold Vapor)	SW846 7470A
Polychlorinated Biphenyls	SW846 8082
Semivolatile Organic Compounds by GC/MS	SW846 8270C
Total Residue as Percent Solids	MCAWW 160.3 MOD
Volatile Organic Compounds by GC/MS	SW846 8260B

References:

MCAWW – "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.
MSA – "Methods of Soil Analysis, Chemical and Microbiological Properties", Part 2, 2nd Edition., 1982 and subsequent rev.
SW846 – "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", 3rd Edition, November 1986 and its updates.

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- ❑ Holding Times
- ❑ GC/MS Instrument Performance Check
- ❑ Initial Calibration
- ❑ Continuing Calibration
- ❑ Blanks
- ❑ System Monitoring Compounds
- ❑ Laboratory Control Samples, Matrix Spikes/Matrix Spike Duplicates
- ❑ Internal Standards
- ❑ ICP Interference Check Sample Performance
- ❑ ICP Serial Dilution Replicate Percent Difference
- ❑ Sample Data Reporting Format
- ❑ Data Qualifiers
- ❑ Summary

Holding Times

Analytical Method	Holding Time Criteria
Cyanide, Total, SW846 9012A	14 days
Inductively Coupled Plasma (ICP) Metals, SW846 6010B	180 days
ICP-MS, SW846 6020	180 days
Mercury in Liquid Waste (Manual Cold Vapor), SW846 7470A	28 days analysis
Polychlorinated Biphenyls, SW846 8082	7 days extraction, 40 days analysis
Semivolatile Organic Compounds by GC/MS, SW846 8270C	7 days extraction, 40 days analysis
Total Residue as Percent Solids, MCAWW 160.3 MOD	28 days analysis
Volatile Organic Compounds by GC/MS, SW846 8260B	14 days

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group with the following exception.

One of three sample coolers for project samples 0713-062402-1245, 0713-062402-0002, 0713-062402-1450, 0713-062402-0003, 0713-062402-1655, and 0713-062402-0004 was received at the laboratory at a temperature of 9.5 °C, with wet ice present. From the COC and cooler receipt form, it is unclear as to which analytical methods were utilized on the project samples found in that cooler. The cooler receipt form indicates that the temperature blank was not near the wet ice. Based on these observations, no corrective action is recommended.

GC/MS Instrument Performance Check

GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception.

Initial Calibration

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols of 30% RSD.

Continuing Calibration

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols of 25% D, with the following exception(s):

During the analysis of volatile organic compounds (SW846 8260B), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 25%:

Inst.	Date	Target Analyte, %D	Associated Samples	Corrective Action
7	6/27	2-Hexanone, 31.5% Bromomethane, 38.7% Chloroethane, 26.9% Acetone, 37.5% 2-Butanone, 29.7%	0713-061902-0001 0713-061902-1640 0713-061902-0002	Flag “UJ” where the target analyte was non-detect and flag “J” for concentrations detected above the reporting limit.
12	6/27	1,2-Dibromo-3-chloropropane, 25.5%	0713-062002-0950 0713-062002-1200 0713-062002-1425	

12	6/27	Acetone, 25.3%	0713-062002-0001 0713-062002-0002	
12	6/28	Acetone, 38.9% 1,2-Dibromo-3-chloropropane, -28.7% Methyl acetate, -25.5%	0713-062102-1030 0713-062102-1225 0713-062102-0001 0713-062102-0002	
12	6/28	2-Hexanone, 32.3% Acetone, 90.3% 2-Butanone, 38.5%	0713-062402-1245 0713-062402-0002 0713-062402-1450 0713-062402-0003 0713-062402-1655 0713-062402-0004	

During the analysis of semivolatile organic compounds (SW846 8270C), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 25%:

Inst.	Date	Target Analyte, %D	Associated Samples	Corrective Action
8	6/27	4-Nitrophenol, 30.3%	0713-061902-1640 0713-061902-0002 0713-061902-1025 0713-061902-1420 0713-062002-0950 0713-062002-1200 0713-062002-1425 0713-062002-0002 0713-062102-1030	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.

Blanks

Target compounds were not detected in associated blanks (trip, equipment, method) prepared and analyzed concurrently with the project samples, with the following exceptions (Positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the common laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds.):

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
0713-061902-0001 (Trip Blank)	1,1-Dichloroethene	0.30 ug/L	0713-061902-1640 0713-061902-1025 0713-061902-1420	1.5 ug/L
0713-061902-0002 (Equip. Blank)	Acetone Chloroform 1,4-Dichlorobenzene	1.9 ug/L 6.0 ug/L 0.18 ug/L	0713-061902-1640 0713-061902-1025 0713-061902-1420	19 ug/L 30 ug/L 0.9 ug/L
0713-062002-0002 (Equip. Blank)	Acetone Chloroform Chloromethane	0.97 ug/L 6.8 ug/L 0.16 ug/L	0713-062002-0950 0713-062002-1200 0713-062002-1425 0713-062002-0001 0713-062002-0002	9.7 ug/L 34 ug/L 0.8 ug/L
0713-062102-0001 (Trip Blank)	1,1-Dichloroethene	0.26 ug/L	0713-062102-1030 0713-062102-1225	1.3 ug/L

0713-062102-0002 (Equip. Blank)	1,4-Dichlorobenzene	0.18 ug/L	0713-062102-1030 0713-062102-1225	0.9 ug/L
0713-062402-0004 (Equip. Blank)	Acetone 1,4-Dichlorobenzene Toluene	5.9 ug/L 0.34 ug/L 0.41 ug/L	0713-062402-1245 0713-062402-0002 0713-062402-1450 0713-062402-1655	59 ug/L 1.7 ug/L 2.1 ug/L
Method Blank (6/27, Inst. 7)	Acetone Methylene chloride 1,2,4-Trichlorobenzene	1.5 µg/L 0.38 µg/L 0.51 µg/L	0713-061902-0001 0713-061902-1640 0713-061902-0002	15.0 µg/L 3.8 µg/L 2.55 µg.L
Method Blank (6/26, Inst.10)	Acetone	1.6 µg/L	0713-061902-1025 0713-061902-1420	16.0 µg/L
Method Blank (6/27, Inst.12)	Acetone	1.2 µg/L	0713-062002-0950 0713-062002-1200 0713-062002-1425 0713-062002-0001 0713-062002-0002	12.0 µg/L
Method Blank (6/28, Inst.12)	Acetone	1.2 µg/L	0713-062102-1030 0713-062102-1225 0713-062102-0001 0713-062102-0002	12.0 µg/L
Method Blank (Metals)	Calcium Magnesium Potassium	0.31 mg/L 0.083 mg/L 0.26 mg/L	All project samples	1.55 mg/L 0.42 mg/L 1.3 mg/L

System Monitoring Compounds

System monitoring/surrogate compounds were added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C and 8082 to confirm the efficiency of the sample preparation procedures. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. The calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts required dilution prior to analysis in an effort by the laboratory to either improve instrument performance by minimizing matrix interference or enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results of the surrogate compounds with "DIL" indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. In each case, the elevated reporting limits were confirmed for the level of dilution.

During the analysis of SVOC (8270C), samples 0713-061902-1025, 0713-061902-0002, 0713-062002-1425, and 0713-062402-1245 had up to one surrogate recovery per fraction outside acceptance limits. However, since the associated method blank and check were in control, no corrective action is recommended.

Laboratory Control Samples, Matrix Spikes/Matrix Spike Duplicates

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was

analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS/MSD and LCS analyses fell within the laboratory QA acceptance criteria.

During the analysis of SVOCs (8270C), the MS/MSD(s) for batch 2176390 had RPD's and/or recoveries outside acceptance limits. However, since the associated method blank and check were in control, no corrective action is recommended.

Internal Standards

Internal Standard compounds were added to each sample matrix prior to the analysis of organic parameters by EPA Methods 8260B, and 8270C to quantify the amount of the target compounds detected within each sample. The calculated response of each IS compound fell within the QA/QC criteria of +100% and – 50% of the corresponding CCV standard.

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were all within the acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. No qualification of the data is recommended.

ICP Serial Dilution Replicate Percent Difference

The results of the ICP Serial Dilution samples analyzed concurrently with the project samples were within compliance with the USEPA protocol criteria of less than 10% replicate percent difference (RPD) for analytes reported above the IDL in both the diluted and un-diluted sample.

Sample Data Reporting Format

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format including Forms I through IX. The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting limit values for the diluted analyses were adjusted for the level of dilution performed and the percent moisture content in solid matrices. The reporting format is complete and compliant with the objectives of the project, no corrective action is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target compounds detected below the reporting limit but above the method detection limit, and/or when target compounds were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of these data is 100% with the few exceptions noted above.

Data Usability Report (DUR)
Delphi, Dort Highway – June/July 2002 Sampling Event
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Group # 2F26168

Analytical results for twenty-two (22) water samples were reviewed to evaluate the data usability. These data were assessed in accordance with guidance from the United States Environmental Protection Agency (USEPA) **National Functional Guidelines for Organic Data Review** (EPA PB99-993506), **National Functional Guidelines for Inorganic Data Review** (EPA PB94-963502), and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996.

This DUR pertains to the following samples:

0713-062602-0940	0713-062702-0945	0713-070102-1100	0713-062502-0945
0713-062602-0001	0713-062702-0002	0713-070102-1335	0713-062502-1210
0713-062602-1530	0713-062702-1210	0713-070102-1625	0713-062502-1500
0713-062602-1130	0713-062702-1420	0713-070102-0001	0713-062502-0001
0713-062602-0002	0713-062702-0003	0713-070102-0002	0713-062502-0002
0713-062602-0003			0713-062502-1705

Project samples were analyzed according to the following analytical methods:

Parameter	**Analytical Method**
Cyanide, Total	SW846 9012A
Inductively Coupled Plasma (ICP) Metals	SW846 6010B
ICP-MS	SW846 6020
Mercury in Liquid Waste (Manual Cold Vapor)	SW846 7470A
Polychlorinated Biphenyls	SW846 8082
Semivolatile Organic Compounds by GC/MS	SW846 8270C
Total Residue as Percent Solids	MCAWW 160.3 MOD
Volatile Organic Compounds by GC/MS	SW846 8260B

References:

MCAWW – "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.
MSA – "Methods of Soil Analysis, Chemical and Microbiological Properties", Part 2, 2nd Edition., 1982 and subsequent rev.
SW846 – "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", 3rd Edition, November 1986 and its updates.

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- ❑ Holding Times
- ❑ GC/MS Instrument Performance Check
- ❑ Initial Calibration
- ❑ Continuing Calibration
- ❑ Blanks
- ❑ System Monitoring Compounds
- ❑ Laboratory Control Samples, Matrix Spikes/Matrix Spike Duplicates
- ❑ Internal Standards
- ❑ ICP Interference Check Sample Performance
- ❑ ICP Serial Dilution Replicate Percent Difference
- ❑ Sample Data Reporting Format
- ❑ Data Qualifiers
- ❑ Summary

Holding Times

Analytical Method	Holding Time Criteria
Cyanide, Total, SW846 9012A	14 days
Inductively Coupled Plasma (ICP) Metals, SW846 6010B	180 days
ICP-MS, SW846 6020	180 days
Mercury in Liquid Waste (Manual Cold Vapor), SW846 7470A	28 days analysis
Polychlorinated Biphenyls, SW846 8082	7 days extraction, 40 days analysis
Semivolatile Organic Compounds by GC/MS, SW846 8270C	7 days extraction, 40 days analysis
Total Residue as Percent Solids, MCAWW 160.3 MOD	28 days analysis
Volatile Organic Compounds by GC/MS, SW846 8260B	14 days

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group with the following exception.

GC/MS Instrument Performance Check

GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception.

Initial Calibration

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols of 30% RSD.

During the analysis of volatile organic compounds (SW846 8260B), the initial calibration standards for the following target compound(s) exhibited a percent relative standard deviation (%RSD) greater than the acceptance criteria of 30%:

Inst.	Date	Target Analyte, %D	Associated Samples	Corrective Action
10	7/2	Acetone, 37.2%	0713-070102-0002	Flag “UJ” where the target analyte was non-detect and flag “J” for concentrations detected above the reporting limit.

Continuing Calibration

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols of 25% D, with the following exception(s):

During the analysis of volatile organic compounds (SW846 8260B), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 25%:

Inst.	Date	Target Analyte, %D	Associated Samples	Corrective Action
7	7/3	Bromomethane, 29.2% Acetone, 49.5% 2-Butanone, -40.7% 2-Hexanone, -39.2% 1,2,4-Trichlorobenzene, -26.8	0713-062602-0940 0713-062602-0001 0713-062602-1530 0713-062602-1130 0713-062602-0002 0713-062602-0003	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.
7	7/5	Bromomethane, 30.3% Acetone, 25.4% Dichlorodifluoromethane, 32.1% 1,2,4-Trichlorobenzene, -37.5%	0713-062702-0945 0713-062702-0002 0713-062702-1210 0713-062702-1420 0713-062702-0003	
7	7/8	2-Hexanone, 41.2% Bromomethane, 30.3% Acetone, 38.6% 2-Butanone, 40.6% 1,2,4-Trichlorobenzene, 28.4%	0713-070102-1100 0713-070102-1335 0713-070102-1625 0713-070102-0001	
10	7/8	Acetone, 45.7% 2-Butanone, 28.8%	0713-070102-0002	
12	7/2	Acetone, 51.4% 1,2-Dibromo-3-chloropropane, 27.6%	0713-062502-1705	

During the analysis of semivolatile organic compounds (SW846 8270C), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 25%:

Inst.	Date	Target Analyte, %D	Associated Samples	Corrective Action
6	7/7	Pentachlorophenol, 33.7%	0713-062502-0945	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.

Blanks

Target compounds were not detected in associated blanks (trip, equipment, method) prepared and analyzed concurrently with the project samples, with the following exceptions (Positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the common laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds.):

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
0713-062602-0003 (Trip Blank)	Acetone	2.8 ug/L	0713-062602-0940 0713-062602-0001 0713-062602-1530 0713-062602-1130	28 ug/L
0713-062602-0002 (Equip. Blank)	Acetone 2-Butanone 1,4-Dichlorobenzene	3.2 ug/L 0.52 ug/L 0.31 ug/L	0713-062602-0940 0713-062602-0001 0713-062602-1530 0713-062602-1130	32 ug/L 5.2 ug/L 1.55 ug/L

0713-062702-0003 (Trip Blank)	Acetone	2.6 ug/L	0713-062702-0945 0713-062702-1210 0713-062702-1420	26 ug/L
0713-062702-0002 (Equip. Blank)	Acetone Chloromethane 1,2-Dichlorobenzene 1,4-Dichlorobenzene 1,2,4-Trichlorobenzene	3.4 ug/L 0.15 ug/L 0.14 ug/L 0.51 ug/L 0.39 ug/L	0713-062702-0945 0713-062702-1210 0713-062702-1420	34 ug/L 0.75 ug/L 0.70 ug/L 2.55 ug/L 1.95 ug/L
0713-070102-0001 (Trip Blank)	Acetone	3.0 ug/L	0713-070102-1100 0713-070102-1335 0713-070102-1625	30 ug/L
0713-070102-0002 (Equip. Blank)	Acetone 2-Butanone Chloromethane 1,4-Dichlorobenzene	13.0 ug/L 2.0 ug/L 0.3 ug/L 0.23 ug/L	0713-070102-1100 0713-070102-1335 0713-070102-1625	130 ug/L 20 ug/L 1.5 ug/L 1.15 ug/L
0713-062502-0002 (Equip. Blank)	Acetone 1,4-Dichlorobenzene	3.9 ug/L 0.29 ug/L	0713-062502-0945 0713-062502-1210 0713-062502-1500 0713-062502-1705	39 ug/L 1.45 ug/L
Method Blank (7/3, Inst. 7)	Acetone 1,2,4-Trichlorobenzene	1.6 µg/L 0.52 µg/L	0713-062602-0940 0713-062602-0001 0713-062602-1530 0713-062602-1130 0713-062602-0002 0713-062602-0003	16.0 µg/L 2.6 µg.L
Method Blank (7/5, Inst.7)	Acetone Methylene chloride 1,2,4-Trichlorobenzene	1.8 µg/L 0.51 µg/L 0.45 µg/L	0713-062702-0945	18.0 µg/L 5.1 µg/L 2.25 µg/L
Method Blank (7/8, Inst.7)	Methylene chloride 1,2,4-Trichlorobenzene	0.78 µg/L 0.49 µg/L	0713-062702-0003 0713-070102-1100 0713-070102-1335 0713-070102-1625 0713-070102-0001	7.8 µg/L 2.45 µg/L
Method Blank (7/8, Inst.10)	Acetone 2-Butanone Methylene chloride	1.9 µg/L 0.61 µg/L 0.34 µg/L	0713-070102-0002	19.0 µg/L 6.1 µg/L 3.4 µg/L
Method Blank (7/1, Inst.12)	Methylene chloride	0.53 µg/L	0713-062502-0945 0713-062502-1210 0713-062502-1500	5.3 µg/L
Method Blank (7/2, Inst.12)	Methylene chloride	0.41 µg/L	0713-062502-0001 0713-062502-0002 0713-062502-1705	4.1 µg/L
Method Blank (7/8, Inst. 8)	Bis (2-Ethylhexyl) phthalate	3.8 µg/L	0713-062602-0001 0713-062602-1130	38.0 µg/L
Method Blank (Metals)	Cadmium Calcium Magnesium Manganese Potassium Zinc	0.00043 mg/L 0.36 mg/L 0.086 mg/L 0.00095 mg/L 0.26 mg/L 0.035 mg/L	All project samples	0.0022 mg/L 1.8 mg/L 0.43 mg/L 0.0048 mg/L 1.3 mg/L 0.18 mg/L

System Monitoring Compounds

System monitoring/surrogate compounds were added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C and 8082 to confirm the efficiency of the sample preparation

procedures. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. The calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts required dilution prior to analysis in an effort by the laboratory to either improve instrument performance by minimizing matrix interference or enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results of the surrogate compounds with "DIL" indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. In each case, the elevated reporting limits were confirmed for the level of dilution.

During the analysis of SVOCs (8270C), samples 0713-062602-0940, 0713-062602-1530, and 0713-0626 for SIM had all surrogate recoveries outside the acceptance limits. Upon re-extraction and reanalysis, the surrogates were again outside acceptance limits. As such, detected semivolatile target compounds for these samples are qualified "J", and non-detect semivolatile target compounds are qualified "UJ".

Laboratory Control Samples, Matrix Spikes/Matrix Spike Duplicates

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS/MSD and LCS analyses fell within the laboratory QA acceptance criteria.

Internal Standards

Internal Standard compounds were added to each sample matrix prior to the analysis of organic parameters by EPA Methods 8260B, and 8270C to quantify the amount of the target compounds detected within each sample. The calculated response of each IS compound fell within the QA/QC criteria of +100% and – 50% of the corresponding CCV standard.

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were all within the acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. No qualification of the data is recommended.

ICP Serial Dilution Replicate Percent Difference

The results of the ICP Serial Dilution samples analyzed concurrently with the project samples were within compliance with the USEPA protocol criteria of less than 10% replicate percent difference (RPD) for analytes reported above the IDL in both the diluted and un-diluted sample.

Sample Data Reporting Format

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format including Forms I through IX. The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting limit values for the diluted analyses were adjusted for the level of dilution performed and the percent moisture content in solid matrices. The reported results for methylphenol represents the total of 3- and 4-methylphenol as indicated in the SDG Case Narrative. The reporting format is complete and compliant with the objectives of the project, no corrective action is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target compounds detected below the reporting limit but above the method detection limit, and/or when target compounds were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of these data is 100% with the few exceptions noted above.

G:49017/Laboratory/Data Validation/Final_DURs/SDG#:2F26168

Data Usability Report (DUR)
Delphi, Dort Highway Sampling Event – May 2002 Sampling Event
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Group # A2G030120

Analytical results for five (5) water samples were reviewed to evaluate the data usability. These data were assessed in accordance with guidance from the United States Environmental Protection Agency (USEPA) **National Functional Guidelines for Organic Data Review** (EPA PB99-993506), and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996.

This DUR pertains to the following samples:

0713-070202-1325	0713-070202-1010	0713-070202-0002
0713-070202-0001	0713-070202-1650	0713-070202-0003

Project samples were analyzed according to the following analytical methods:

Parameter	**Analytical Method**
Cyanide, Total	SW843 9012A
Hexavalent Chromium	SW846 7196A
ICP-MS	SW846 6020
Mercury in Liquid Waste	SW846 7470A
Polychlorinated Biphenyls	SW846 8082
Semivolatile Organic Compounds by GC/MS	SW846 8270C
Trace Inductively Coupled Plasma Metals	SW 846 6010B
Volatile Organic Compounds by GC/MS	SW846 8260B
SIM	SW846 8270 SIM

References:

MCAWW – "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.
SW846 – "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", 3rd Edition, November 1986 and its updates.

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- ❑ Holding Times
- ❑ GC/MS Instrument Performance Check
- ❑ Initial Calibration
- ❑ Continuing Calibration
- ❑ Blanks
- ❑ System Monitoring Compounds
- ❑ Laboratory Control Samples, Matrix Spikes/Matrix Spike Duplicates
- ❑ Internal Standards
- ❑ Sample Data Reporting Format
- ❑ Data Qualifiers
- ❑ Summary

Holding Times

Analytical Method	Holding Time Criteria
Cyanide, Total	14 day analysis
Hexavalent Chromium	24 hours
ICP-MS	6 months
Mercury in Liquid Waste	28 days analysis
Polychlorinated Biphenyls	40 days post extraction
Semivolatile Organic Compounds by GC/MS	40 days post extraction
Trace Inductively Coupled Plasma Metals	6 months analysis
Volatile Organic Compounds by GC/MS	14 days analysis
SIM	40 days post extraction

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group.

GC/MS Instrument Performance Check

GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception.

Initial Calibration

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols: target compound(s) must exhibit a percent relative standard deviation (%RSD) less than the acceptance criteria of 30%.

During the analysis of volatile organics, the initial calibration standards for the following target compound(s) exhibited a %RSD greater than the accepted guidance criteria of 30%:

Inst	Date	Compound	Affected Samples	Qualifier
10	7/2	Acetone, 37.203%	0713-070202-1010	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.

Continuing Calibration

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols: the continuing calibration verification (CCV) standards for the target compound(s) must exhibit a percent drift (%D) less than the acceptance criteria of 25%:

Inst	Date	Compound	Affected Samples	Qualifier
7	7/9	2-Hexanone, 42.8% Bromomethane, 26.6% Acetone, 47.4% 2-Butanone, 41.6% 1,2,4-Trichlorobenzene, 33.6%	0713-070202-1325 0713-070202-0001 0713-070202-1650 0713-070202-0002 0713-070202-0003	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.

7	7/9	Acetone, 47.4% 2-Butanone, 41.6% 2-Hexanone, 42.8% 1,2,4-Trichlorobenzene, 33.6%	0713-070202-1325 0713-070202-0001 0713-070202-1650 0713-070202-0002 0713-070202-0003	
10	7/10	2-Hexanone, 53.7% Acetone, 62.4% 2-Butanone, 72.9% Dichlorodifluoromethane, 33.4%	0713-070202-1010	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.

Blanks

Target compounds were not detected in associated blanks (trip, equipment, method) prepared and analyzed concurrently with the project samples, with the following exceptions (Positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the common laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds.):

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank (7/9, Inst. 7)	Acetone 1,2,4-Trichlorobenzene	1.5 µg/L 0.43 µg/L	0713-070202-1325 0713-070202-0001 0713-070202-1650 0713-070202-0002 0713-070202-0003	15 µg/L 2.15 µg/L
Method Blank (7/10, Inst. 10)	Acetone Methylene chloride	0.56 µg/L 0.61 µg/L	0713-070202-1010	5.6 µg/L 6.1 µg/L
Method Blank	Calcium Magnesium Manganese Potassium Sodium Zinc Silver	0.39 mg/L 0.088 mg/L 0.001 mg/L 0.30 mg/L 0.48 mg/L 0.023 mg/L 0.00023 mg/L	0713-070202-1325 0713-070202-0001 0713-070202-1010 0713-070202-1650 0713-070202-0002 0713-070202-0003	1.95 mg/L 0.44 mg/L 0.005 mg/L 1.5 mg/L 2.4 mg/L 0.23 mg/L 0.00115mg/L

System Monitoring Compounds

System monitoring/surrogate compounds were added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C and 8082 to confirm the efficiency of the sample preparation procedures. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. The calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts required dilution prior to analysis in an effort by the laboratory to either improve instrument performance by minimizing matrix interference or enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results of the surrogate compounds with "DIL" indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. In each case, the elevated reporting limits were confirmed for the level of dilution. No corrective action is required.

Laboratory Control Samples, Matrix Spikes/Matrix Spike Duplicates

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS and LCS analyses fell within the laboratory QA acceptance criteria. No qualification of the data is recommended.

Internal Standards

Internal Standard compounds were added to each sample matrix prior to the analysis of organic parameters by EPA Methods 8260B, and 8270C to quantify the amount of the target compounds detected within each sample. The calculated response of each IS compound fell within the QA/QC criteria of +100% and – 50% of the corresponding CCV standard.

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were all within the acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. No qualification of the data is recommended.

ICP Serial Dilution Replicate Percent Difference

The results of the ICP Serial Dilution samples analyzed concurrently with the project samples were within compliance with the USEPA protocol criteria of less than 10% replicate percent difference (RPD) for analytes reported above the IDL in both the diluted and un-diluted samples, with the following exception. Potassium (K) exhibited an RPD of 10.8% for sample 0713-070202-1325L. The results for K reported for this sample should be flagged “J” as estimated.

Sample Data Reporting Format

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format including Forms I through IX. The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting limit values for the diluted analyses were adjusted for the level of dilution performed and the percent moisture content in solid matrices. The reporting format is complete and compliant with the objectives of the project, no corrective action is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target compounds detected below the reporting limit but above the method detection limit, and/or when target compounds were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of these data is 100% with the few exceptions noted above.

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Data Usability Report (DUR)
Delphi, Dort Highway Sampling Event – May 2002 Sampling Event
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Group # A2G030199

Analytical results for one (1) waste sample was reviewed to evaluate the data usability. These data were assessed in accordance with guidance from the United States Environmental Protection Agency (USEPA) **National Functional Guidelines for Organic Data Review** (EPA PB99-993506), and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996.

This DUR pertains to the following samples:

0713-070202-1440

Project samples were analyzed according to the following analytical methods:

Parameter	Analytical Method
Extractable Petroleum Hydrocarbons	SW846 8015B
PCBs	SW846 8082
Semivolatile Organic Compounds by GC/MS	SW846 8270C
Volatile Organic Compounds by GC/MS	SW846 8260B
Density/Specific Gravity	SM 2710F
Viscosity, Kinematic	ASTM D445

References:

MCAWW – "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.
SW846 – "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", 3rd Edition, November 1986 and its updates.

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- ❑ Holding Times
- ❑ GC/MS Instrument Performance Check
- ❑ Initial Calibration
- ❑ Continuing Calibration
- ❑ Blanks
- ❑ System Monitoring Compounds
- ❑ Laboratory Control Samples, Matrix Spikes/Matrix Spike Duplicates
- ❑ Internal Standards
- ❑ Sample Data Reporting Format
- ❑ Data Qualifiers
- ❑ Summary

Holding Times

Analytical Method	Holding Time Criteria
Extractable Petroleum Hydrocarbons, SW846 8015B	14 days
PCBs, SW846 8082	7 days Ext/40 days after Ext.
Semivolatile Organic Compounds by GC/MS, SW846 8270C	7 days Ext/40 days after Ext.
Volatile Organic Compounds by GC/MS, SW846 8260B	14 days analysis

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group.

GC/MS Instrument Performance Check

GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception.

Initial Calibration

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols: target compound(s) must exhibit a percent relative standard deviation (%RSD) less than the acceptance criteria of 30%.

During the analysis of volatile organics, the initial calibration standards for the following target compound(s) exhibited a %RSD greater than the accepted guidance criteria of 30%:

Inst	Date	Compound	Affected Samples	Qualifier
8	7/1	Acetone, 81.8% Methylene chloride, 56.2%	0713-070202-1440	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.

Continuing Calibration

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols: the continuing calibration verification (CCV) standards for the target compound(s) must exhibit a percent drift (%D) less than the acceptance criteria of 25%.

Blanks

Target compounds were not detected in associated blanks (trip, equipment, method) prepared and analyzed concurrently with the project samples, with the following exceptions (Positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the common laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds.):

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank (7/11, Inst. 8)	Acetone 1,2-Dichloroethane Methyl acetate Methylene chloride	320 ug/kg 32 ug/kg 57 ug/kg 200 ug/kg	0713-070202-1440	3200 ug/kg 160 ug/kg 285 ug/kg 2000 ug/kg

System Monitoring Compounds

System monitoring/surrogate compounds were added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C and 8082 to confirm the efficiency of the sample preparation procedures. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy

of the reported results. The calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts required dilution prior to analysis in an effort by the laboratory to either improve instrument performance by minimizing matrix interference or enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results of the surrogate compounds with "DIL" indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. In each case, the elevated reporting limits were confirmed for the level of dilution. No corrective action is required.

Laboratory Control Samples, Matrix Spikes/Matrix Spike Duplicates

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS and LCS analyses fell within the laboratory QA acceptance criteria. No qualification of the data is recommended.

Internal Standards

Internal Standard compounds were added to each sample matrix prior to the analysis of organic parameters by EPA Methods 8260B, and 8270C to quantify the amount of the target compounds detected within each sample. The calculated response of each IS compound fell within the QA/QC criteria of +100% and – 50% of the corresponding CCV standard.

Sample Data Reporting Format

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format including Forms I through IX. The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting limit values for the diluted analyses were adjusted for the level of dilution performed and the percent moisture content in solid matrices. The reporting format is complete and compliant with the objectives of the project, no corrective action is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target compounds detected below the reporting limit but above the method detection limit, and/or when target compounds were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of these data is 100% with the few exceptions noted above.

Data Usability Report (DUR)
Delphi, Dort Highway – November 2002 Sampling Event
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Group # 2K07186

Analytical results for fifteen (15) solid samples and one (1) water sample were reviewed to evaluate the data usability. These data were assessed in accordance with guidance from the United States Environmental Protection Agency (USEPA) **National Functional Guidelines for Organic Data Review** (EPA PB99-993506), **National Functional Guidelines for Inorganic Data Review, Final** (EPA 540-R-01-008), and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996.

This DUR pertains to the following samples:

Lab Lot No.: A2K070186	**Lab Lot No.: A2K070199**
371A-110602-1120	091A-110602-1130
371B-110602-1230	091B-110602-1215
371C-110602-1250	091C-110602-1235
231A-110602-1445	092A-110602-1415
231B-110602-1600	092B-110602-1430
231C-110602-1620	092C-110602-1440
TRIP BLANK	093A-110602-1520
	093B-110602-1540
	093C-110602-1550

Project samples were analyzed according to the following analytical methods:

Parameter	**Analytical Method**	**Holding Time Criteria**
Cyanide, Total	SW846 9012A	14 Days
Mercury in Solid Waste	SW846 7471A	28 Days
Polychlorinated Biphenyls	SW846 8082	7 Days Ext./40 Days post Ext
Semivolative Organic Compounds by GC/MS	SW846 8270C	7 Days Ext./40 Days post Ext
Total Residue as Percent Solids	MCAWW 160.3 MOD	28 Days
Trace Inductively Coupled Plasma Metals	SW846 6010B	6 Months
Volatile Organic Compounds by GC/MS	SW846 8260B	14 Days

References:

MCAWW – "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.
SW846 – "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", 3rd Edition, November 1986 and its updates.

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- ❑ Holding Times
- ❑ GC/MS Instrument Performance Check
- ❑ Initial Calibration Procedures
- ❑ Continuing Calibration Procedures
- ❑ Blank Sample Analysis
- ❑ System Monitoring Compound Recoveries
- ❑ Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- ❑ Internal Standard Recoveries
- ❑ ICP Interference Check Sample Performance
- ❑ ICP Serial Dilution Replicate Percent Difference
- ❑ Sample Data Reporting Format

- Data Qualifiers
- Summary

Holding Times

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group.

GC/MS Instrument Performance Check

GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception.

Initial Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s).

During the analysis of volatile organic compounds (EPA Method SW846 8260B), the initial calibration standards for the following target compound(s) exhibited a relative percent deviation (%RSD) greater than the acceptance criteria of 30%:

Inst.	Date	Target Analyte, %RSD	Associated Samples	Corrective Action
8	11/03 10:29	Acetone, 67.413	371A-110602-1120 371B-110602-1230 317C-1106-02-1250 231A-110602-1445 231B-110602-1600 231C-110602-1620	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.

Continuing Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of volatile organic compounds (EPA Method SW846 8260B), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 25%:

Inst.	Date	Target Analyte, %D	Associated Samples	Corrective Action
10	11/13 09:42	2-Butanone, 37.8 Acetone, 45.4 2-Hexanone, 36.9 Methyl Acetate, 31.1	TRIP BLANK	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.

Blank Sample Analysis

In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the common laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds. Target

compounds were not detected in associated blank samples (trip, equipment, method) prepared and analyzed concurrently with the project samples, with the following exception(s):

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank (11/16, Inst 8)	Methyl Acetate Methylene Chloride	29 µg/kg 170µg/kg	371A-110602-1120 371B-110602-1230 317C-1106-02-1250 231A-110602-1445 231B-110602-1600 231C-110602-1620	145 µg/kg 1700 µg/kg
TRIP BLANK (11/13, Inst 10)	Bromomethane	0.31 µg/L	TRIP BLANK	1.55 µg/L
Method Blank Solid Matrix	Aluminum Barium Potassium Lead	5.4 mg/kg 0.34 mg/kg 16.4 mg/kg 0.25 mg/kg	231A-110602-1445 231B-110602-1600 231C-110602-1620 091A-110602-1130 091B-110602-1215 091C-110602-1235 092A-110602-1415 092B-110602-1430 092C-110602-1440 093A-110602-1520 093B-110602-1540 093C-110602-1550	27 mg/kg 1.7 mg/kg 82 mg/kg 2.5 mg/kg

System Monitoring Compound Recoveries

System monitoring/surrogate compounds were added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C and 8082 to confirm the efficiency of the sample preparation procedures. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. The calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts required dilution prior to analysis in an effort by the laboratory to either improve instrument performance by minimizing matrix interference or enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results of the surrogate compounds with "DIL" indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. In each case, the elevated reporting limits were confirmed for the level of dilution.

Laboratory Control Samples (LCS), Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS/MSD and LCS analyses fell within the laboratory QA acceptance criteria.

Internal Standard Recoveries

Internal Standard compounds were added to each sample matrix prior to the analysis of organic parameters by EPA Method 8260B to quantify the amount of the target compounds detected within each sample. The calculated response of each IS compound fell within the QA/QC criteria of +100% and –50% of the corresponding CCV standard.

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were all within the acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. No qualification of the data is recommended.

ICP Serial Dilution Replicate Percent Difference

The results of the ICP Serial Dilution samples analyzed concurrently with the project samples were within compliance with the USEPA protocol criteria of less than 10% replicate percent difference (RPD) for analytes reported above the IDL in both the diluted and un-diluted sample.

Sample Data Reporting Format

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format including Forms I through IX. The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting limit values for the diluted analyses were adjusted for the level of dilution performed and the percent moisture content in solid matrices. The reporting format is complete and compliant with the objectives of the project, no corrective action is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target compounds detected below the reporting limit but above the method detection limit, and/or when target compounds were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of these data is 100% with the few exceptions noted above.

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Data Usability Report (DUR)
Delphi, Dort Highway – November 2002 Sampling Event
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Group # 2K08168

Analytical results for eighteen (18) solid samples and two (2) water samples were reviewed to evaluate the data usability. These data were assessed in accordance with guidance from the United States Environmental Protection Agency (USEPA) **National Functional Guidelines for Organic Data Review** (EPA PB99-993506), **National Functional Guidelines for Inorganic Data Review, Final** (EPA 540-R-01-008), and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996.

This DUR pertains to the following samples:

Lab Lot No.: A2K080176	Lab Lot No.: A2K080179	Lab Lot No.: A2K080168
163C-110702-1650	232A-110702-0845	161A-110702-0930
	232B-110702-0920	161A-110702-D
	232B-110702-D	161B-110702-1030
	232B-110702-TB	161C-110702-1045
	232C-110702-1020	162A-110702-1105
	251A-110702-1120	162A-110702-D
	251B-110702-1230	162B-110702-1125
		162C-110702-1140
		163A-110702-1255
		163B-110702-1310
		163B-110702-D
		163C-110702-EB

Project samples were analyzed according to the following analytical methods:

Parameter	Analytical Method	Holding Time Criteria
Cyanide, Total	SW846 9012A	14 Days
Mercury in Solid Waste	SW846 7471A	28 Days
Polychlorinated Biphenyls	SW846 8082	7 Days Ext./40 Days post Ext
Semivolative Organic Compounds by GC/MS	SW846 8270C	7 Days Ext./40 Days post Ext
Total Residue as Percent Solids	MCAWW 160.3 MOD	28 Days
Trace Inductively Coupled Plasma Metals	SW846 6010B	6 Months
Volatile Organic Compounds by GC/MS	SW846 8260B	14 Days

References:

MCAWW – "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.
SW846 – "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", 3rd Edition, November 1986 and its updates.

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- ❑ Holding Times
- ❑ GC/MS Instrument Performance Check
- ❑ Initial Calibration Procedures
- ❑ Continuing Calibration Procedures
- ❑ Blank Sample Analysis
- ❑ System Monitoring Compound Recoveries
- ❑ Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- ❑ Internal Standard Recoveries

- ❑ Duplicate Sample Analysis
- ❑ ICP Interference Check Sample Performance
- ❑ ICP Serial Dilution Replicate Percent Difference
- ❑ Sample Data Reporting Format
- ❑ Data Qualifiers
- ❑ Summary

Holding Times

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group.

GC/MS Instrument Performance Check

GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception.

Initial Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s).

During the analysis of volatile organic compounds (EPA Method SW846 8260B), the initial calibration standards for the following target compound(s) exhibited a relative percent deviation (%RSD) greater than the acceptance criteria of 30%:

Inst.	Date	Target Analyte, %RSD	Associated Samples	Corrective Action
8	11/02 15:44	Acetone, 67.4	232A-110702-0845 232B-110702-0920 232B-110702-D 232C-110702-1020 251A-110702-1120 251B-110702-1230	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.
12	11/08 20.05	Methylene chloride, 34.1	232B-110702-TB	

During the analysis of semivolatile organic compounds (EPA Method SW846 8270C), the initial calibration standards for the following target compound(s) exhibited a relative percent deviation (%RSD) greater than the acceptance criteria of 30%:

Inst.	Date	Target Analyte, %RSD	Associated Samples	Corrective Action
9	11/22 11:24	Hexachlorocyclopentadiene, 37.2	163C-110702-EB	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.

Continuing Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of volatile organic compounds (EPA Method SW846 8260B), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 25%:

Inst.	Date	Target Analyte, %D	Associated Samples	Corrective Action
8	11/17 11:21	Bromoethane, -28.5 Chloroethane, -27.7	232A-110702-0845 232B-110702-0920 232B-110702-D 232C-110702-1020 251A-110702-1120 251B-110702-1230	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.
12	11/12 16:43	Acetone, -25.6	232B-110702-TB	

During the analysis of semivolatile organic compounds (EPA Method SW846 8270C), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 25%:

Inst.	Date	Target Analyte, %D	Associated Samples	Corrective Action
8	11/12 13:11	Hexachlorocyclopentadiene, 26.8	161A-110702-D	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.
8	11/14 12:22	Hexachlorocyclopentadiene, 28.5	232A-110702-0845 232B-110702-0920 232B-110702-D 232C-110702-1020 251A-110702-1120 251B-110702-1230	

Blank Sample Analysis

In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the common laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds. Target compounds were not detected in associated blank samples (trip, equipment, method) prepared and analyzed concurrently with the project samples, with the following exception(s):

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
232B-110702-TB (Trip Blank)	Acetone 2-Butanone	1.6 ppb 1.2 ppb	232A-110702-0845 232B-110702-0920 232B-110702-D 232C-110702-1020 251A-110702-1120 251B-110702-1230	16 ppb 12 ppb
Method Blank (11/16, Inst. 8)	Methyl acetate Methylene chloride	29 µg/kg 170 µg/kg	232A-110702-0845 232B-110702-0920 232B-110702-D 232C-110702-1020 251A-110702-1120 251B-110702-1230	145 µg/kg 1700 µg/kg

Method Blank 11/18, Prep Batch #2315128 (aqueous)	Calcium Manganese Potassium Thallium	0.19 mg/L 0.0011 mg/L 0.15 mg/L 0.0055 mg/L	163C-110702-EB	0.95 mg/L 0.0055 mg/L 0.75 mg/L 0.0275 mg/L
Method Blank 11/14, Prep Batch #2318115 (solid)	Aluminum Iron Magnesium Manganese Potassium	5.8 mg/kg 4.3 mg/kg 2.9 mg/kg 0.10 mg/kg 18.7 mg/kg	161A-110702-0930 161A-110702-D 161B-110702-1030 161C-110702-1045 162A-110702-1105 162A-110702-D 162B-110702-1125 162C-110702-1140 163A-110702-1255 163B-110702-1310 163B-110702-D 163C-110702-1650 232A-110702-0845 232B-110702-0920 232B-110702-D 232C-110702-1020 251A-110702-1120 251B-110702-1230	29.0 mg/kg 43.0 mg/kg 14.5 mg/kg 0.50 mg/kg 93.5 mg/kg

System Monitoring Compound Recoveries

System monitoring/surrogate compounds were added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C and 8082 to confirm the efficiency of the sample preparation procedures. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. The calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts required dilution prior to analysis in an effort by the laboratory to either improve instrument performance by minimizing matrix interference or enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results of the surrogate compounds with "DIL" indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. In each case, the elevated reporting limits were confirmed for the level of dilution.

Laboratory Control Samples (LCS), Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS/MSD and LCS analyses fell within the laboratory QA acceptance criteria.

Internal Standard Recoveries

Internal Standard compounds were added to each sample matrix prior to the analysis of organic parameters by EPA Method 8260B to quantify the amount of the target compounds detected within each

sample. The calculated response of each IS compound fell within the QA/QC criteria of +100% and –50% of the corresponding CCV standard.

Duplicate Sample Analysis

The replicate percent difference was evaluated for each duplicate sample pair, wherein the reported results were greater than 5X the reporting limit, in order to monitor the precision or reproducibility of the data. The RPD for each sample pair was within the QA/QC limit of 30% for aqueous samples and 50% for solid matrices, with the following exception(s). For those target analytes exhibiting RPDs greater than the acceptance criteria, it is recommended that an average concentration be reported.

Sample ID/Duplicate	Target Analyte	Concn.	RPD	Avg. Concn.
161A-110702-0930 161A-110702-D	Manganese	412 mg/kg 226 mg/kg	58.3	319 mg/kg
161A-110702-0930 161A-110702-D	Sodium	1540 mg/kg 662 mg/kg	79.8	1101 mg/kg
232B-110702-0920 232B-110702-D	Aluminum	3840 mg/kg 1900 mg/kg	67.6	2870 mg/kg
232B-110702-0920 232B-110702-D	Barium	24.5 mg/kg 11.4 mg/kg	73.0	18.4 mg/kg
232B-110702-0920 232B-110702-D	Chromium	7.6 mg/kg 4.2 mg/kg	57.6	5.9 mg/kg
232B-110702-0920 232B-110702-D	Nickel	10.1 mg/kg 5.6 mg/kg	57.3	7.9 mg/kg
232B-110702-0920 232B-110702-D	Vanadium	11.5 mg/kg 6.4 mg/kg	57.0	9.0 mg/kg

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were all within the acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. No qualification of the data is recommended.

ICP Serial Dilution Replicate Percent Difference

The results of the ICP Serial Dilution samples analyzed concurrently with the project samples were within compliance with the USEPA protocol criteria of less than 10% replicate percent difference (RPD) for analytes reported above the IDL in both the diluted and un-diluted sample, with the following exception. Beryllium (RPD=29.3), Calcium (RPD=13.4), Chromium (RPD=10.3), Iron (RPD=11.1), Manganese (RPD=15.2), Nickel (RPD=17.9) and Zinc (RPD=38.7) exhibited RPD greater than the acceptance criteria, in project sample 094A-111902-1350, due to physical and chemical interference. Therefore, the results for those target analytes reported for this sample should be flagged “J” as estimated.

Sample Data Reporting Format

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format including Forms I through IX. The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting limit values for the diluted analyses were adjusted for the level of dilution performed and the percent moisture content in solid matrices. The

reporting format is complete and compliant with the objectives of the project, no corrective action is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target compounds detected below the reporting limit but above the method detection limit, and/or when target compounds were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of these data is 100% with the few exceptions noted above.

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Data Usability Report (DUR)
Delphi, Dort Highway – November 2002 Sampling Event
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Group # 2K08213

Analytical results for sixteen (16) solid samples and four (4) water samples were reviewed to evaluate the data usability. These data were assessed in accordance with guidance from the United States Environmental Protection Agency (USEPA) **National Functional Guidelines for Organic Data Review** (EPA PB99-993506), **National Functional Guidelines for Inorganic Data Review, Final** (EPA 540-R-01-008), and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996.

This DUR pertains to the following samples:

Lab Lot No.: A2K080213	Lab Lot No.: A2K080219	Lab Lot No.: A2K090204	Lab Lot No.: A2K090206
251C-110702-1245	253B-110702-1500	254A-110802-0850	271A-110802D
252A-110702-1310	253C-110702-1515	254A-110802-TB	271B-110802-1400
252B-110702-1340		254B-110802-0905	272A-110802-1540
252C-110702-1400		254C-110802-0925	272B-110802-1600
253A-110702-1440		255A-110802-0950	272B-110802-EB
		255B-110802-1010	
		255C-110802-1031	
		271A-110802-1350	

Project samples were analyzed according to the following analytical methods:

Parameter	Analytical Method	Holding Time Criteria
Cyanide, Total	SW846 9012A	14 Days
Mercury in Liquid Waste	SW846 7470A	28 Days
Mercury in Solid Waste	SW846 7471A	28 Days
Polychlorinated Biphenyls	SW846 8082	7 Days Ext./40 Days post Ext
Semivolative Organic Compounds by GC/MS	SW846 8270C	7 Days Ext./40 Days post Ext
Total Residue as Percent Solids	MCAWW 160.3 MOD	28 Days
Trace Inductively Coupled Plasma Metals	SW846 6010B	6 Months
Volatile Organic Compounds by GC/MS	SW846 8260B	14 Days

References:

MCAWW – "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.
SW846 – "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", 3rd Edition, November 1986 and its updates.

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- Holding Times
- GC/MS Instrument Performance Check
- Initial Calibration Procedures
- Continuing Calibration Procedures
- Blank Sample Analysis
- System Monitoring Compound Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Internal Standard Recoveries
- Duplicate Sample Analysis
- ICP Interference Check Sample Performance
- ICP Serial Dilution Replicate Percent Difference

- Sample Data Reporting Format
- Data Qualifiers
- Summary

Holding Times

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group.

GC/MS Instrument Performance Check

GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception.

Initial Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s).

During the analysis of volatile organic compounds (EPA Method SW846 8260B), the initial calibration standards for the following target compound(s) exhibited a relative percent deviation (%RSD) greater than the acceptance criteria of 30%:

Inst.	Date	Target Analyte, %RSD	Associated Samples	Corrective Action
8	11/03 10:29	Acetone, 67.4	251C-110702-1245 252A-110702-1310 252B-110702-1340 252C-110702-1400 253A-110702-1440 253B-110702-1500 253C-110702-1515	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.
12	11/08 20:30	Methylene chloride, 34.1	254A-110802-0850 254B-110802-0905 254C-110802-0925 255A-110802-0950 255B-110802-1010 255C-110802-1031 271A-110802-1350 271A-110802D 272A-110802-1540	

Continuing Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of volatile organic compounds (EPA Method SW846 8260B), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 25%:

Inst.	Date	Target Analyte, %D	Associated Samples	Corrective Action
7	11/14 19:05	1,2,4-Trichlorobenzene, -29.0 Cyclohexane, -26.0 Methylcyclohexane, -28.0	254A-110802-TB 271B-110802-1400 272B-110802-1600 272B-110802-EB	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.
8	11/17 11:21	Bromomethane, -28.5 Chloroethane, -27.7	253B-110702-1500 253C-110702-1515	
8	11/18 10:21	Bromomethane, -29.1 Chloroethane, -26.5	251C-110702-1245 252A-110702-1310 252B-110702-1340 252C-110702-1400 253A-110702-1440	

During the analysis of semivolatile organic compounds (EPA Method SW846 8270C), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 25%:

Inst.	Date	Target Analyte, %D	Associated Samples	Corrective Action
8	11/14 12:22	Hexachlorocyclopentadiene, 28.5	252C-110702-1400 253A-110702-1440 271A-110802D 272A-110802-1540	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.
9	11/21 10:56	Hexachlorocyclopentadiene, -37.4	255C-110802-1031	

Blank Sample Analysis

In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the common laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds. Target compounds were not detected in associated blank samples (trip, equipment, method) prepared and analyzed concurrently with the project samples, with the following exception(s):

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
254A-110802-TB (Trip Blank)	Acetone 2-Butanone	2.5 ppb 1.1 ppb	251C-110702-1245 252A-110702-1310 252B-110702-1340 252C-110702-1400 253A-110702-1440 253B-110702-1500 253C-110702-1515 254A-110802-0850 254B-110802-0905 254C-110802-0925 255A-110802-0950 255B-110802-1010 255C-110802-1031 271A-110802-1350 271A-110802D 271B-110802-1400	22 ppb 11 ppb

			272A-110802-1540 272B-110802-1600 272B-110802-EB	
272B-110802-EB (Equip. Blank)	Acetone 1,4-Dichlorobenzene	1.3 ppb 0.58 ppb	251C-110702-1245 252A-110702-1310 252B-110702-1340 252C-110702-1400 253A-110702-1440 253B-110702-1500 253C-110702-1515 254A-110802-0850 254B-110802-0905 254C-110802-0925 255A-110802-0950 255B-110802-1010 255C-110802-1031 271A-110802-1350 271A-110802D 271B-110802-1400 272A-110802-1540 272B-110802-1600 272B-110802-EB	13 ppb 2.9 ppb
Method Blank 11/16, Inst 8	Methyl acetate Methylene chloride	29 µg/kg 170 µg/kg	251C-110702-1245 252A-110702-1310 252B-110702-1340 252C-110702-1400 253A-110702-1440 253B-110702-1500 253C-110702-1515	145 µg/kg 1700 µg/kg
272B-110802-EB (Equip. Blank)	Bis(2-Ethylhexyl)phthalate	4.8 ppb	251C-110702-1245 252A-110702-1310 252B-110702-1340 252C-110702-1400 253A-110702-1440 253B-110702-1500 253C-110702-1515 254A-110802-0850 254B-110802-0905 254C-110802-0925 255A-110802-0950 255B-110802-1010 255C-110802-1031 271A-110802-1350 271A-110802D 271B-110802-1400 272A-110802-1540 272B-110802-1600	48 ppb
Method Blank (Aqueous)	Cadmium Calcium Copper Manganese Potassium	0.00036 mg/L 0.19 mg/L 0.0031 mg/L 0.0041 mg/L 0.15 mg/L	272B-110802-1600 272B-110802-EB 271B-110802-1400	0.0018 mg/L 0.95 mg/L 0.031 mg/L 0.0205 mg/L 0.75 mg/L

Method Blank (Solid)	Barium	0.089 mg/kg	251C-110702-1245	0.445 mg/kg
	Calcium	32.3 mg/kg	252A-110702-1310	161.5 mg/kg
	Chromium	0.16 mg/kg	252B-110702-1340	0.8 mg/kg
	Copper	0.26 mg/kg	252C-110702-1400	2.6 mg/kg
	Iron	7.9 mg/kg	253A-110702-1440	79 mg/kg
	Manganese	0.10 mg/kg	253B-110702-1500	0.5 mg/kg
	Potassium	18.5 mg/kg	253C-110702-1515	92.5 mg/kg
	Selenium	0.37 mg/kg	254A-110802-0850	1.85 mg/kg
	Zinc	2.4 mg/kg	254B-110802-0905	24 mg/kg
			254C-110802-0925	
			255A-110802-0950	
			255B-110802-1010	
			255C-110802-1031	
			271A-110802-1350	
			271A-110802D	
			272A-110802-1540	

System Monitoring Compound Recoveries

System monitoring/surrogate compounds were added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C and 8082 to confirm the efficiency of the sample preparation procedures. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. The calculated recovery of these compounds fell within the laboratory specific quality control criteria, with the exception(s) noted below. In a few instances, sample extracts required dilution prior to analysis in an effort by the laboratory to either improve instrument performance by minimizing matrix interference or enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results of the surrogate compounds with "DIL" indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. In each case, the elevated reporting limits were confirmed for the level of dilution.

During the analysis of PCBs (EPA Method SW846 8082) the surrogate Decachlorobiphenyl recovery was below the acceptance criteria in project sample 271B-110802-1400. Positive results for Aroclors 1242, 1248, 1254 and 1260 should be qualified as estimated "J", and non-detects qualified as "UJ".

Laboratory Control Samples (LCS), Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS/MSD and LCS analyses fell within the laboratory QA acceptance criteria.

Internal Standard Recoveries

Internal Standard compounds were added to each sample matrix prior to the analysis of organic parameters by EPA Method 8260B to quantify the amount of the target compounds detected within each sample. The calculated response of each IS compound fell within the QA/QC criteria of +100% and –50% of the corresponding CCV standard.

Duplicate Sample Analysis

The replicate percent difference was evaluated for each duplicate sample pair, wherein the reported results were greater than 5X the reporting limit, in order to monitor the precision or reproducibility of the data. The RPD for each sample pair was within the QA/QC limit of 30% for aqueous samples and 50% for solid matrices.

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were all within the acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. No qualification of the data is recommended.

ICP Serial Dilution Replicate Percent Difference

The results of the ICP Serial Dilution samples analyzed concurrently with the project samples were within compliance with the USEPA protocol criteria of less than 10% replicate percent difference (RPD) for analytes reported above the IDL in both the diluted and un-diluted sample, with the following exception. Calcium (RPD=10.2), Chromium (RPD=10.5) and Lead (RPD=13.8) exhibited RPDsgreater than the acceptance criteria, in project sample 272A-110802-1540, due to physical and chemical interference. Therefore, the results for those target analytes reported for this sample should be flagged "J" as estimated.

Sample Data Reporting Format

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format including Forms I through IX. The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting limit values for the diluted analyses were adjusted for the level of dilution performed and the percent moisture content in solid matrices. The reporting format is complete and compliant with the objectives of the project, no corrective action is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target compounds detected below the reporting limit but above the method detection limit, and/or when target compounds were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of these data is 100% with the few exceptions noted above.

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Data Usability Report (DUR)
Delphi, Dort Highway – Field Event I
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Group # 2K09209

Analytical results for twelve (12) solid samples and seven (7) water samples were reviewed to evaluate the data usability. These data were assessed in accordance with guidance from the United States Environmental Protection Agency (USEPA) **National Functional Guidelines for Organic Data Review** (EPA PB99-993506), **National Functional Guidelines for Inorganic Data Review** (EPA PB94-963502), and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996.

This DUR pertains to the following samples:

451A-110802-0930	452C-110802-1140	311C-110802-1610	274B-111102-1110
451B-110802-0945	451A-110802-TB	273A-111102-0910	275A-111102-1350
451C-110802-1030	311A-110802-EB	273A-111102-TB	275B-111102-1410
452A-110802-1110	311A-110802-1540	273B-111102-0930	275B-111102-EB
452B-110802-1125	311B-110802-1600	274A-111102-1045	

Project samples were analyzed according to the following analytical methods:

Parameter	**Analytical Method**
Cyanide, Total	SW846 9012A
Inductively Coupled Plasma (ICP) Metals	SW846 6010B
Mercury in Liquid Waste (Manual Cold Vapor)	SW846 7470A
Mercury in Solid Waste (Manual Cold Vapor)	Sw846 7471A
Polychlorinated Biphenyls	SW846 8082
Semivolatile Organic Compounds by GC/MS	SW846 8270C
Total Residue as Percent Solids	MCAWW 160.3 MOD
Volatile Organic Compounds by GC/MS	SW846 8260B

References:

MCAWW – "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.
MSA – "Methods of Soil Analysis, Chemical and Microbiological Properties", Part 2, 2nd Edition., 1982 and subsequent rev.
SW846 – "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", 3rd Edition, November 1986 and its updates.

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- ❑ Holding Times
- ❑ GC/MS Instrument Performance Check
- ❑ Initial Calibration Procedures
- ❑ Continuing Calibration Procedures
- ❑ Blank Sample Analysis
- ❑ System Monitoring Compound Recoveries
- ❑ Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- ❑ Internal Standard Recoveries
- ❑ ICP Interference Check Sample Performance
- ❑ ICP Serial Dilution Replicate Percent Difference
- ❑ Sample Data Reporting Format
- ❑ Data Qualifiers
- ❑ Summary

Holding Times

Analytical Method	Holding Time Criteria
Cyanide, Total, SW846 9012A	14 days
Inductively Coupled Plasma (ICP) Metals, SW846 6010B	180 days
Mercury in Liquid Waste (Manual Cold Vapor), SW846 7470A	28 days analysis
Mercury in Solid Waste (Manual Cold Vapor), SW846 7471A	28 days analysis
Polychlorinated Biphenyls, SW846 8082	7 days extraction, 40 days analysis
Semivolatile Organic Compounds by GC/MS, SW846 8270C	7 days extraction, 40 days analysis
Total Residue as Percent Solids, MCAWW 160.3 MOD	28 days analysis
Volatile Organic Compounds by GC/MS, SW846 8260B	14 days

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group.

GC/MS Instrument Performance Check

GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception.

Initial Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols with the following exception(s):

During the analysis of volatile organic compounds (SW846 8260B), the initial calibration standards for the following target compound(s) exhibited a percent relative standard deviation (%RSD) greater than the acceptance criteria of 30%:

Inst.	Date	Target Analyte, %RSD	Associated Samples	Corrective Action
12	11/8	Methylene chloride, 34.089	451A-110802-0930 451B-110802-0945 451C-110802-1030 452A-110802-1110 452B-110802-1125 452C-110802-1140 311A-110802-1540 311B-110802-1600 311C-110802-1610 273A-111102-0910 274A-111102-1045 275A-111102-1350	Flag “UJ” where the target analyte was non-detect and flag “J” for concentrations detected above the reporting limit.

Continuing Calibration Procedures

Continuing instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of volatile organic compounds (SW846 8260B), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 25%:

Inst.	Date	Target Analyte, %D	Associated Samples	Corrective Action
7	11/14	Acetone, 47.6 2-Butanone, -33.4 2-Hexanone, -32.7 1,2,4-Trichlorobenzene, 27.2	451A-110802-TB 311A-110802-EB 274B-111102-1110 275B-111102-1410 275B-111102-EB	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.
7	11/14	1,2,4-Trichlorobenzene, -29.0 Cyclohexane, -26.0 Methylcyclohexane, 28.0	451A-110802-TB 311A-110802-EB 274B-111102-1110 275B-111102-1410 275B-111102-EB	
10	11/15	Methylene chloride, -28.7 2-Butanone, 42.6 Bromomethane, 39.4 Acetone, 52.3 4-Methyl-2-pentanone, 31.8 2-Hexanone, 48.8 Methyl acetate, 46.7 1,2-Dibromo-3-chloropropane, -25.4	273A-111102-TB 273B-111102-0930	

During the analysis of semi-volatile organic compounds (SW846 8270C), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 20%:

Inst.	Date	Target Analyte, %D	Associated Samples	Corrective Action
8	11/14	Hexachlorocylcopentadiene, 28.5	451B-110802-0945 451C-110802-1030 452B-110802-1125	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.
8	11/18	Bis (2-ethylhexyl) Phthalate, 29.7	273B-111102-0930 274B-111102-1110 275B-111102-1410 275B-111102-EB	

Blank Sample Analysis

In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the common laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds. Target compounds were not detected in associated blank samples (trip, equipment, method) prepared and analyzed concurrently with the project samples, with the following exception(s):

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
451A-110802-TB (Trip Blank)	Acetone 2-Butanone	2.6 ppb 1.2 ppb	451A-110802-0930 451B-110802-0945 451C-110802-1030 452A-110802-1110 452B-110802-1125 452C-110802-1140 311A-110802-EB 311A-110802-1540	26 ppb 12 ppb

			311B-110802-1600 311C-110802-1610	
311A-110802-EB (Equip. Blank)	Chloroform	3.6 ppb	451A-110802-0930 451B-110802-0945 451C-110802-1030 452A-110802-1110 452B-110802-1125 452C-110802-1140 311A-110802-1540 311B-110802-1600 311C-110802-1610	18 ppb
273A-11102-TB (Trip Blank)	Acetone 2-Butanone	2.3 ppb 1.2 ppb	273A-111102-0910 273B-111102-0930 274A-111102-1045 274B-111102-1110 275A-111102-1350 275B-111102-1410 275B-111102-EB	23 ppb 12 ppb
275B-111102-EB (Equip. Blank)	Acetone 1,4-Dichlorobenzene	1.4 ppb 0.52 ppb	273A-111102-0910 273B-111102-0930 274A-111102-1045 274B-111102-1110 275A-111102-1350 275B-111102-1410	14 ppb 2.6 ppb
Method Blank-VOCs (Inst. 10, 11/15/02)	1,2,4- Trichlorobenzene	0.86 µg/L	273A-111102-TB 273B-111102-0930	4.3 µg/L
Method Blank-VOCs (Inst. 12, 11/20/02)	Acetone	53 mg/kg	273A-111102-0910 274A-111102-1045 275A-111102-1350	530 mg/kg
Method Blank-SVOCs (Inst. 8, 11/18/02)	Bis(2-Ethylhexyl) phthlate	3.9 µg/L	273B-111102-0930 274B-111102-1110 275B-111102-1410 275B-111102-EB	39 µg/L
Method Blank-Metals Aqueous Matrix Lot #A2K130000-140	Calcium Magnesium Potassium	0.065 mg/L 0.063 mg/L 0.24 mg/L	311A-110802-EB 273B-111102-0930 274B-111102-1110 275B-111102-1410 275B-111102-EB	0.325 mg/L 0.315 mg/L 1.2 mg/L
Method Blank-Metals Solid Matrix Lot #A2K150000-115	Barium Magnesium Potassium	0.27 mg/kg 8.0 mg/kg 31.8 mg/kg	451A-110802-0930 451B-110802-0945 451C-110802-1030 452A-110802-1110 452B-110802-1125 452C-110802-1140 273A-111102-0910 274A-111102-1045 275A-111102-1350	1.35 mg/kg 40.0 mg/kg 159 mg/kg

System Monitoring Compound Recoveries

System monitoring/surrogate compounds were added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C and 8082 to confirm the efficiency of the sample preparation procedures. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. The calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts required dilution prior to analysis in an effort

by the laboratory to either improve instrument performance by minimizing matrix interference or enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results of the surrogate compounds with "DIL" indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. In each case, the elevated reporting limits were confirmed for the level of dilution.

During PCB analysis, the recovery for Decachlorobiphenyl fell below QC limits of 30% for samples 273B-111102-0930 (12%), 274B-111102-1110 (14%) and 275B-111102-1410 (14%). Positive results for Aroclors 1242, 1248, 1254, and 1260 should be qualified as estimated "J", and non-detects qualified as "UJ" for project samples 273B-111102-0930, 274B-111102-1110 and 275B-111102-1410. The RPD between the LCS and LCSD was greater than the acceptance limit of 10%. Therefore, positive results in all project samples for Aroclors 1016, 1221, and 1232 should be qualifed as estimated "J" and non-detects qualified as "UJ".

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS and LCS analyses fell within the laboratory QA acceptance criteria with the following exceptions.

Internal Standard Recoveries

Internal Standard compounds were added to each sample matrix prior to the analysis of organic parameters by EPA Methods 8260B, and 8270C to quantify the amount of the target compounds detected within each sample. The calculated response of each IS compound fell within the QA/QC criteria of +100% and – 50% of the corresponding CCV standard.

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were all within the acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. No qualification of the data is recommended.

ICP Serial Dilution Replicate Percent Difference

The results of the ICP Serial Dilution samples analyzed concurrently with the project samples were within compliance with the USEPA protocol criteria of less than 10% replicate percent difference (RPD) for analytes reported above the IDL in both the diluted and un-diluted sample. The serial dilution RPDs for Copper (RPD = 11.8%), Potassium (RPD = 26.8%) and Zinc (RPD = 11.0) were greater than the QC acceptance limit of 10% in project sample 451A-110802-0930. Positive results for Copper, Potassium, and Zinc should be qualified as estimated "J", non-detects do not require further qualification.

Sample Data Reporting Format

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format including Forms I through IX. The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting limit values for the diluted analyses were adjusted for the level of dilution performed and the percent moisture content in solid matrices. The reporting format is complete and compliant with the objectives of the project, no corrective action is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target compounds detected below the reporting limit but above the method detection limit, and/or when target compounds were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of these data is 100% with the few exceptions noted above.

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Data Usability Report (DUR)
Delphi, Dort Highway – Field Event I
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Group # 2K12217

Analytical results for nineteen (19) solid samples and six (6) water samples were reviewed to evaluate the data usability. These data were assessed in accordance with guidance from the United States Environmental Protection Agency (USEPA) **National Functional Guidelines for Organic Data Review** (EPA PB99-993506), **National Functional Guidelines for Inorganic Data** (EPA 540-R-01-008), and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996.

This DUR pertains to the following samples:

Lab Lot No.: A2K120217	Lab Lot No.: A2K120225	Lab Lot No.: A2K130204
453A-111102-TB	143B-111102-1520	276A-111202-0850
453A-111102-1050	143A-111102-EB	276A-111202-DUP
453A-111102-D		276A-111202-TB
453B-111102-1105		276B-111202-1130
453C-111102-1120		277A-111202-1200
141A-111102-1400		277B-111202-1220
141A-111102-D		278A-111202-1410
141B-111102-1410		278B-111202-1450
142A-111102-1435		279A-111202-1530
142B-111102-1500		279B-111202-1600
143A-111102-1530		279B-111202-EB
143A-111102-D		

Project samples were analyzed according to the following analytical methods:

Parameter	Analytical Method	Holding Time Criteria
Cyanide, Total	SW846 9012A	14 Days
Inductively Coupled Plasma (ICP) Metals	SW846 6010B	6 Months
Mercury in Liquid Waste	SW846 7470A	28 Days
Mercury in Solid Waste	SW846 7471A	28 Days
Polychlorinated Biphenyls	SW846 8082	7 Days Ext./40 Days post Ext
Semivolative Organic Compounds by GC/MS	SW846 8270C	7 Days Ext./40 Days post Ext
Total Residue as Percent Solids	MCAWW 160.3 MOD	28 Days
Volatile Organic Compounds by GC/MS	SW846 8260B	14 Days

References:

MCAWW – "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.
SW846 – "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", 3rd Edition, November 1986 and its updates.

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- Holding Times
- GC/MS Instrument Performance Check
- Initial Calibration Procedures
- Continuing Calibration Procedures
- Blank Sample Analysis
- System Monitoring Compounds Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recovery

- Internal Standards Recoveries
- Duplicate Sample Analysis
- ICP Interference Check Sample Performance
- ICP Serial Dilution Replicate Percent Difference
- Sample Data Reporting Format
- Data Qualifiers
- Summary

Holding Times

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group.

GC/MS Instrument Performance Check

GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception.

Initial Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of volatile organic compounds (SW846 8260B), the initial calibration standards for the following target compound(s) exhibited a percent relative standard deviation (%RSD) greater than the acceptance criteria of 30%:

Inst.	Date	Target Analyte, %RSD	Associated Samples	Corrective Action
12	11/8	Methylene chloride, 34.089	453A-111102-1050 453A-111102-D 453B-111102-1105 453C-111102-1120 276A-111202-0850 276A-111202-DUP 276B-111202-1130 277A-111202-1200 278A-111202-1410 278B-111202-1450 279A-111202-1530	Flag “UJ” where the target analyte was non-detect and flag “J” for concentrations detected above the reporting limit.

During the analysis of semivolatile organic compounds (SW846 8270C), the initial calibration standards for the target compound(s) exhibited a percent relative standard deviation (%RSD) less than the acceptance criteria of 30% without exception.

During the analysis of polychlorinated biphenyls (SW846 8082), the initial calibration standards for the target compound(s) exhibited a percent relative standard deviation (%RSD) less than the acceptance criteria of 20% without exception.

Continuing Calibration Procedures

Continuing instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of volatile organic compounds (SW846 8260B), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 25%:

Inst.	Date	Target Analyte, %D	Associated Samples	Corrective Action
7	11/15	Acetone, 42.6 2-Butanone, -30.2 2-Hexanone, -30.8	276A-111202-TB 277B-111202-1220 279B-111202-1600 279B-111202-EB	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.
10	11/15	2-Butanone, 42.6 Acetone, 52.3 Methylene chloride, 28.7 4-Methyl-2-pentanone, 31.8 2-Hexanone, 48.8 Methyl acetate, 46.7 Bromomethane, -39.4 1,2-Dibromo-3-chloropropane, -25.4	453A-111102-TB	

During the analysis of semi-volatile organic compounds (SW846 8270C), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 25%:

Inst.	Date	Target Analyte, %D	Associated Samples	Corrective Action
8	11/18	Bis(2-ethylhexyl)phthalate, 29.7	277B-111202-1220 279A-111202-1600 279B-111202-EB	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.

Blank Sample Analysis

In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the common laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds. Target compounds were not detected in associated blank samples (trip, equipment, method) prepared and analyzed concurrently with the project samples, with the following exception(s):

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
453A-111102-TB (Trip Blank)	Acetone 2-Butanone	2.6 ppb 1.1 ppb	453A-111102-1050 453A-111102-D 453B-111102-1105 453C-111102-1120 141B-111102-1410	26 ppb 11 ppb
276A-111202-TB (Trip Blank)	Acetone 2-Butanone	3.1 ppb 1.3 ppb	276A-111202-0850 276A-111202-DUP 276A-111202-TB 276B-111202-1130 277A-111202-1200 277B-111202-1220	31 ppb 13 ppb

			278A-111202-1410 278B-111202-1450 279A-111202-1530 279B-111202-1600 279B-111202-EB	
Method Blank-VOCs (Inst. 10, 11/15/02)	1,2,4-Trichlorobenzene	0.86 ppb	453A-111102-TB	4.3 ppb
Method Blank-VOCs (Inst. 12, 11/20/02)	Acetone	53 ppb	453A-111102-1050 453A-111102-D 453B-111102-1105 453C-111102-1120 276A-111202-0850 276A-111202-DUP 276B-111202-1130 277A-111202-1200 278A-111202-1410 278B-111202-1450 279A-111202-1530	530 ppb
Method Blank-SVOCs (Inst. 8, 11/18/02)	Bis(2- ethylhexyl)phthalate	3.9 ppb	453A-111102-1050 453A-111102-D 453B-111102-1105 453C-111102-1120 276A-111202-0850 276A-111202-DUP 276B-111202-1130 277A-111202-1200 277B-111202-1220 278A-111202-1410 278B-111202-1450 279A-111202-1530 279A-111202-1600 279B-111202-EB	39 ppb
Method Blank-Metals Aqueous Matrix Lot #A2K140000-111	Calcium Manganese Potassium Zinc	0.23 mg/L 0.00086 mg/L 0.15 mg/L 0.016 mg/L	143A-111102-EB 277B-111202-1220 279B-111202-1600 279B-111202-EB	1.15 mg/L 0.0043 mg/L 0.75 mg/L 0.16 mg/L
Method Blank-Metals Solid Matrix Lot #A2K190000-353	Barium Calcium Copper Magnesium Manganese Potassium	0.60 mg/kg 28.7 mg/kg 0.42 mg/kg 9.4 mg/kg 0.11 mg/kg 31.7 mg/kg	453A-111102-1050 453A-111102-D 453B-111102-1105 453C-111102-1120 141A-111102-1400 141A-111102-D 141B-111102-1410 142A-111102-1435 142B-111102-1500 143A-111102-1530 143A-111102-D 143B-111102-1540 276A-111202-0850 276A-111202-DUP 276B-111202-1130 277A-111202-1200 278A-111202-1410 278B-111202-1450 279A-111202-1530	3.0 mg/kg 143.5 mg/kg 4.2 mg/kg 47.0 mg/kg 0.55 mg/kg 158.5 mg/kg

System Monitoring Compound Recoveries

System monitoring/surrogate compounds were added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C and 8082 to confirm the efficiency of the sample preparation procedures. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. The calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts required dilution prior to analysis in an effort by the laboratory to either improve instrument performance by minimizing matrix interference or enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results of the surrogate compounds with "DIL" indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. In each case, the elevated reporting limits were confirmed for the level of dilution.

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS and LCS analyses fell within the laboratory QA acceptance criteria with the following exceptions.

During metals analysis, the spike recovery for Chromium (%R=134), Copper (%R=133 and %R=300), and Manganese (%R=2370 and %R=532) were above the required QC acceptance range of 125%R. The spiked recoveries were below QC limits for Antimony (%R=57 and %R=56). Because the reported sample results are >IDL, these results should be qualified with a "J" for solid samples.

Internal Standard Recoveries

Internal Standard compounds were added to each sample matrix prior to the analysis of organic parameters by EPA Methods 8260B, and 8270C to quantify the amount of the target compounds detected within each sample. The calculated response of each IS compound fell within the QA/QC criteria of +100% and – 50% of the corresponding CCV standard.

Duplicate Sample Analysis

The replicate percent difference was evaluated for each duplicate sample pair, where the reported results were greater than 5X the reporting limit, in order to monitor the precision or reproducibility of the data. The RPD for each sample pair was within the QA/QC limit of 30% for aqueous samples and 50% for solid matrices, with the following exception(s). For those target analytes exhibiting RPDs greater than the acceptance criteria, it is recommended that an average concentration be reported.

Sample ID/Duplicate	Target Analyte	Concn.	RPD	Avg. Concn.
453A-111102-1050 453A-111102-D	Arsenic	2.0 mg/kg 3.5 mg/kg	54.6	2.8 mg/kg
141A-111102-1400 141A-111102-D	Barium	129 mg/kg 64.0 mg/kg	67.4	96.5 mg/kg

	Calcium	2300 mg/kg 55700 mg/kg	184.1	29000 mg/kg
	Magnesium	3550 mg/kg 16500 mg/kg	129.2	10030 mg/kg
143A-111102-1530 143A-111102-D	Arsenic	1.2 mg/kg 4.1 mg/kg	109.4	2.7 mg/kg
	Calcium	680 mg/kg 2750 mg/kg	120.7	1715 mg/kg
	Chromium	8.1 mg/kg 4.9 mg/kg	135.2	6.5 mg/kg
	Cobalt	1.8 mg/kg 3.6 mg/kg	66.7	2.7 mg/kg
	Copper	4.6 mg/kg 86.8 mg/kg	179.9	45.7 mg/kg
	Iron	6430 mg/kg 33400 mg/kg	135.4	19915 mg/kg
	Lead	5.0 mg/kg 275 mg/kg	192.9	140 mg/kg
	Manganese	36.9 mg/kg 418 mg/kg	167.6	227 mg/kg
	Nickel	5.9 mg/kg 40.2 mg/kg	148.8	23.1 mg/kg
	Vanadium	8.6 mg/kg 15.3 mg/kg	56.1	12.0 mg/kg
276A-111202-0850 276A-111202-DUP	Calcium	10200 mg/kg 32300 mg/kg	104.0	96.5 mg/kg
	Magnesium	6200 mg/kg 12700 mg/kg	68.8	29000 mg/kg
	Manganese	51.0 mg/kg 10.1 mg/kg	65.8	10030 mg/kg

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were all within the acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. No qualification of the data is recommended.

ICP Serial Dilution Replicate Percent Difference

The results of the ICP Serial Dilution samples analyzed concurrently with the project samples were within compliance with the USEPA protocol criteria of less than 10% replicate percent difference (RPD) for analytes reported above the IDL in both the diluted and un-diluted sample with the following exception. The serial dilution RPD for Potassium (RPD = 51.1%) was greater than the QC acceptance limit of 10% in project sample 453A-111102-1050. Positive results for Potassium should be qualified as estimated "J", non-detects do not require further qualification.

Sample Data Reporting Format

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format including Forms I through IX. The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting limit values for the diluted analyses were adjusted for the level of dilution performed and the percent moisture content in solid matrices. The reporting format is complete and compliant with the objectives of the project, no corrective action is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target compounds detected below the reporting limit but above the method detection limit, and/or when target compounds were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of these data is 100% with the few exceptions noted above.

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Data Usability Report (DUR)
Delphi, Dort Highway – Field Event I
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Group # 2K13216

Analytical results for fourteen (14) solid samples and five (5) water samples were reviewed to evaluate the data usability. These data were assessed in accordance with guidance from the United States Environmental Protection Agency (USEPA) **National Functional Guidelines for Organic Data Review** (EPA PB99-993506), **National Functional Guidelines for Inorganic Data Review** (EPA PB94-963502), and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996.

This DUR pertains to the following samples:

181A-111202-0845	182B-111202-1000	211A-111202-TB	233A-111302-1150
181A-111202D	182C-111202-1030	183C-111202-EB	233B-111302-1210
181B-111202-0905	183A-111202-1055	2710A-111302-0900	233C-111302-1445
181C-111202-0930	183B-111202-1105	2710B-111302-0940	233C-111302-EB
182A-111202-0945	183C-111202-1130	2710B-111302-TB	

Project samples were analyzed according to the following analytical methods:

Parameter	**Analytical Method**
Cyanide, Total	SW846 9012A
Inductively Coupled Plasma (ICP) Metals	SW846 6010B
Mercury in Liquid Waste (Manual Cold Vapor)	SW846 7470A
Mercury in Solid Waste (Manual Cold Vapor)	Sw846 7471A
Polychlorinated Biphenyls	SW846 8082
Semivolatile Organic Compounds by GC/MS	SW846 8270C
Total Residue as Percent Solids	MCAWW 160.3 MOD
Volatile Organic Compounds by GC/MS	SW846 8260B

References:

MCAWW – "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.
MSA – "Methods of Soil Analysis, Chemical and Microbiological Properties", Part 2, 2nd Edition., 1982 and subsequent rev.
SW846 – "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", 3rd Edition, November 1986 and its updates.

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- Holding Times
- GC/MS Instrument Performance Check
- Initial Calibration Procedures
- Continuing Calibration Procedures
- Blank Sample Analysis
- System Monitoring Compounds Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recovery
- Internal Standards Recoveries
- ICP Interference Check Sample Performance
- ICP Serial Dilution Replicate Percent Difference
- Sample Data Reporting Format
- Data Qualifiers
- Summary

Holding Times

Analytical Method	Holding Time Criteria
Cyanide, Total, SW846 9012A	14 days
Inductively Coupled Plasma (ICP) Metals, SW846 6010B	180 days
Mercury in Liquid Waste (Manual Cold Vapor), SW846 7470A	28 days analysis
Mercury in Solid Waste (Manual Cold Vapor), SW846 7471A	28 days analysis
Polychlorinated Biphenyls, SW846 8082	7 days extraction, 40 days analysis
Semivolatile Organic Compounds by GC/MS, SW846 8270C	7 days extraction, 40 days analysis
Total Residue as Percent Solids, MCAWW 160.3 MOD	28 days analysis
Volatile Organic Compounds by GC/MS, SW846 8260B	14 days

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group.

GC/MS Instrument Performance Check

GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception.

Initial Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of volatile organic compounds (SW846 8260B), the initial calibration standards for the following target compound(s) exhibited a percent relative standard deviation (%RSD) greater than the acceptance criteria of 30%:

Inst.	Date	Target Analyte, %RSD	Associated Samples	Corrective Action
8	11/3	Acetone, 67.413	2710A-111302-0900 233A-111302-1150 233B-111302-1210 233C-111302-1445	Flag “UJ” where the target analyte was non-detect and flag “J” for concentrations detected above the reporting limit.
12	11/8	Methylene chloride, 34.089	211A-111202-TB	

Continuing Calibration Procedures

Continuing instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of volatile organic compounds (SW846 8260B), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 25%:

Inst.	Date	Target Analyte, %D	Associated Samples	Corrective Action
8	11/21	Bromomethane, -35.1 Chloroethane, -38.8 Trichlorofluoromethane, -26.5	2710A-111302-0900 233A-111302-1150 233B-111302-1210 233C-111302-1445	Flag “UJ” where the target analyte was non-detect and flag “J” for concentrations detected above the reporting limit.

10	11/16	2-Butanone, 25.2 Bromomethane, 61.9 Acetone, 26.1 2-Hexanone, 30.3	2710B-111302-0940 2710B-111302-TB 233C-111302-EB	
12	11/15	Acetone, -27.6	211A-111202-TB	

During the analysis of semi-volatile organic compounds (SW846 8270C), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 25%:

Inst.	Date	Target Analyte, %D	Associated Samples	Corrective Action
7	11/27	2,4-Dinitrophenol, -30.4	2710B-111302-0940 233C-111302-EB	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.
8	11/26	2,4-Dinitrophenol, -31.5	2710A-111302-0900 233A-111302-1150 233B-111302-1210 233C-111302-1445	

Blank Sample Analysis

In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the common laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds. Target compounds were not detected in associated blank samples (trip, equipment, method) prepared and analyzed concurrently with the project samples, with the following exception(s):

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
211A-111102-TB (Trip Blank)	Acetone 2-Butanone	1.6 ppb 1.2 ppb	183C-111202-EB	16 ppb 12 ppb
2710B-111302-TB (Trip Blank)	Acetone 2-Butanone	2.3 ppb 1.1 ppb	2710A-111302-0900 2710B-111302-0940 2710B-111302-TB 233A-111302-1150 233B-111302-1210 233C-111302-1445 233C-111302-EB	23 ppb 11 ppb
Method Blank-VOCs (Inst. 8, 11/21/02)	Acetone Methylene chloride	69 ppb 62 ppb	2710A-111302-0900 233A-111302-1150 233B-111302-1210 233C-111302-1445	690 ppb 620 ppb
Method Blank-VOCs (Inst. 10, 11/16/02)	Carbon disulfide Methylene chloride	0.28 ppb 0.76 ppb	2710B-111302-0940 2710B-111302-TB 233C-111302-EB	1.4 ppb 7.6 ppb
Method Blank-Metals Aqueous Matrix Lot #A2K150000-126	Barium Manganese Potassium	0.0026 mg/L 0.0010 mg/L 0.13 mg/L	183C-111202-EB 2710B-111302-0940 233C-111302-EB	0.013 mg/L 0.005 mg/L 0.65 mg/L
Method Blank-Metals Solid Matrix Lot #A2K190000-341	Antimony Barium Calcium Copper	0.24 mg/kg 0.079 mg/kg 21.9 mg/kg 0.30 mg/kg	181A-111202-0845 181A-111202D 181B-111202-0905 181C-111202-0930	1.2 mg/kg 0.395 mg/kg 109.5 mg/kg 3.0 mg/kg

	Magnesium Potassium Sodium	4.6 mg/kg 19.0 mg/kg 50.8 mg/kg	182A-111202-0945 182B-111202-1000 182C-111202-1030 183A-111202-1055 183B-111202-1105 183C-111202-1130 2710A-111302-0900 233A-111302-1150 233B-111302-1210 233C-111302-1445	23.0 mg/kg 95.0 mg/kg 254.0 mg/kg

System Monitoring Compound Recoveries

System monitoring/surrogate compounds were added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C and 8082 to confirm the efficiency of the sample preparation procedures. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. The calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts required dilution prior to analysis in an effort by the laboratory to either improve instrument performance by minimizing matrix interference or enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results of the surrogate compounds with "DIL" indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. In each case, the elevated reporting limits were confirmed for the level of dilution.

During PCB analysis, the recovery for Decachlorobiphenyl fell below the QC limits for sample 2710B-111302-0940 (17). Positive results for Arochlors 1242, 1248, 1254, and 1260 should be qualified as estimated "J", and non-detects qualified as "UJ".

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS and LCS analyses fell within the laboratory QA acceptance criteria with the following exceptions.

During metals analysis, the spike recovery for Aluminum (%R=128) was above the required QC acceptance range of 125%R. The spiked recoveries were below QC limits for mercury (%R=32 and %R=35), calcium (%R=60 and %R=61), magnesium (%R=74) and manganese (%R=74). Because the reported sample results are >IDL, these results should be qualified with a "J" for aqueous samples.

Internal Standard Recoveries

Internal Standard compounds were added to each sample matrix prior to the analysis of organic parameters by EPA Methods 8260B, and 8270C to quantify the amount of the target compounds detected within each sample. The calculated response of each IS compound fell within the QA/QC criteria of +100% and – 50% of the corresponding CCV standard.

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were all within the acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. No qualification of the data is recommended.

ICP Serial Dilution Replicate Percent Difference

The results of the ICP Serial Dilution samples analyzed concurrently with the project samples were within compliance with the USEPA protocol criteria of less than 10% replicate percent difference (RPD) for analytes reported above the IDL in both the diluted and un-diluted sample with the following exception. The serial dilution RPD for Nickel (RPD = 16.8%) was greater than the QC acceptance limit of 10% in project sample 181A-111202-0845. Positive results for Nickel should be qualified as estimated "J", non-detects do not require further qualification.

Sample Data Reporting Format

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format including Forms I through IX. The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting limit values for the diluted analyses were adjusted for the level of dilution performed and the percent moisture content in solid matrices. The reporting format is complete and compliant with the objectives of the project, no corrective action is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target compounds detected below the reporting limit but above the method detection limit, and/or when target compounds were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of these data is 100% with the few exceptions noted above.

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Data Usability Report (DUR)
Delphi, Dort Highway – November 2002 Sampling Event
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Group # 2K14306

Analytical results for sixteen (16) solid samples and six (6) water samples were reviewed to evaluate the data usability. These data were assessed in accordance with guidance from the United States Environmental Protection Agency (USEPA) **National Functional Guidelines for Organic Data Review** (EPA PB99-993506), **National Functional Guidelines for Inorganic Data Review, Final** (EPA 540-R-01-008), and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996.

This DUR pertains to the following samples:

Lab Lot No.: A2K140306	**Lab Lot No.: A2K150191**
211A-111302-TB	215A-111402-TB
211A-111302-EB	215A-111402-0845
211A-111302-1510	215B-111402-0900
211B-111302-1530	215C-111402-0920
211C-111302-1540	215C-111402-EB
213A-111302-1600	081A-111402-1245
213B-111302-1620	081B-111402-1300
213C-111302-1635	081C-111402-1315
214A-111302-1650	082A-111402-1345
214B-111302-1710	082B-111402-1400
214C-111302-1725	082C-111402-1415

Project samples were analyzed according to the following analytical methods:

Parameter	**Analytical Method**	**Holding Time Criteria**
Cyanide, Total	SW846 9012A	14 Days
Hexavalent Chromium	SW 846 7196A	24 hours
Mercury in Liquid Waste	SW846 7470A	28 Days
Mercury in Solid Waste	SW846 7471A	28 Days
Polychlorinated Biphenyls	SW846 8082	7 Days Ext./40 Days Post Ext.
Semivolatile Organic Compounds by GC/MS	SW846 8270C	7 Days Ext./40 Days Post Ext.
Total Residue as Percent Solids	MCAWW 160.3 MOD	28 Days
Trace Inductively Coupled Plasma Metals	SW 846 6020	6 Months
Volatile Organic Compounds by GC/MS	SW846 8260B	14 Days

References:

MCAWW – "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.
SW846 – "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", 3rd Edition, November 1986 and its updates.

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- ❑ Holding Times
- ❑ GC/MS Instrument Performance Check
- ❑ Initial Calibration Procedures
- ❑ Continuing Calibration Procedures
- ❑ Blank Sample Analysis
- ❑ System Monitoring Compound Recoveries

- ❑ Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- ❑ Internal Standard Recoveries
- ❑ ICP Interference Check Sample Performance
- ❑ ICP Serial Dilution Replicate Percent Difference
- ❑ Sample Data Reporting Format
- ❑ Data Qualifiers
- ❑ Summary

Holding Times

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group.

GC/MS Instrument Performance Check

GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception.

Initial Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols.

Continuing Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of volatile organic compounds (EPA Method SW846 8260B), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 25%:

Inst.	Date	Target Analyte, %D	Associated Samples	Corrective Action
8	11/21 09:58	Bromomethane, -35.1 Chloroethane, -38.8 Trichlorofluoromethane, -26.5	211A-111302-1510 211B-111302-1530 211C-111302-1540 213A-111302-1600 213B-111302-1620 213C-111302-1635 214A-111302-1650 214B-111302-1710 214C-111302-1725 215A-111402-0845 215B-111402-0900 215C-111402-0920	Flag “UJ” where the target analyte was non-detect and flag “J” for concentrations detected above the reporting limit.
10	11/16 10:53	2-Butanone, 25.2 Bromomethane, 61.9 Acetone, 26.1 2-Hexanone, 30.3	211A-111302-TB 211A-111302-EB 215A-111402-TB 215C-111402-EB	

10	11/21 11:49	2-Butanone, 38.9 Acetone, 46.0 2-Hexanone, 37.6 Methyl Acetate, 46.2	211A-111302-TB 211A-111302-EB 215A-111402-TB 215C-111402-EB	

During the analysis of semivolatile organic compounds (EPA Method SW846 8270C), the initial calibration standards for target compounds were within the required percent drift (%D) criteria of 25%.

Inst.	Date	Target Analyte, %D	Associated Samples	Corrective Action
7	12/04 10:15	2,4-Dinitrophenol, -28,3 4-Nitrophenol, 28.3	211A-111302-EB	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.
8	11/26 12:52	2,4-Dinitrophenol, 31.5	211B-111302-1530 211C-111302-1540 214B-111302-1710 214C-111302-1725	
8	12/01 10:22	2,4-Dinitrophenol, -35.2	215C-111402-EB	

Blank Sample Analysis

In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the common laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds. Target compounds were not detected in associated blank samples (trip, equipment, method) prepared and analyzed concurrently with the project samples, with the following exception(s):

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
211A-111302-TB (Trip Blank)	Acetone 2-Butanone	2.2 ppb 1.1 ppb	211A-111302-EB 211A-111302-1510 211B-111302-1530 211C-111302-1540 213A-111302-1600 213B-111302-1620 213C-111302-1635 214A-111302-1650 214B-111302-1710 214C-111302-1725	22 ppb 11 ppb
211A-111302-EB (Euip. Blank)	Chloromethane	0.63 ppb	211A-111302-1510 211B-111302-1530 211C-111302-1540 213A-111302-1600 213B-111302-1620 213C-111302-1635 214A-111302-1650 214B-111302-1710 214C-111302-1725	3.2 ppb

215A-111402-TB (Trip Blank)	Acetone 2-Butanone	2.1 ppb 1.0 ppb	215A-111402-0845 215B-111402-0900 215C-111402-0920 215C-111402-EB	21 ppb 10 ppb
215C-111302-EB (Euip. Blank)	Methylene chloride	0.34 ppb	215A-111402-0845 215B-111402-0900 215C-111402-0920	3.4 ppb
Method Blank (11/21, Inst 8)	Acetone Methylene Chloride	69 µg/kg 62 µg/kg	211A-111302-1510 211B-111302-1530 211C-111302-1540 213A-111302-1600 213B-111302-1620 213C-111302-1635 214A-111302-1650 214B-111302-1710 214C-111302-1725	690 µg/kg 620 µg/kg
Method Blank (11/16, Inst 10)	Carbon disulfide Methylene chloride	0.28 µg/L 0.76 µg/L	211A-111302-TB 211A-111302-EB	1.4 µg/L 7.6 µg/L
Method Blank (11/21, Inst 10)	Bromomethane	0.30 µg/L	215A-111402-TB 215C-111402-EB	1.5 µg/L
Method Blank (Aqueous Matrix)	Calcium Magnesium Potassium	0.19 mg/L 0.086 mg/L 0.30 mg/L	211A-111302-EB 215C-111402-EB 081C-111402-1315 082C-111402-1415	0.95 mg/L 0.43 mg/L 1.5 mg/L
Method Blank (Solid Matrix)	Aluminum Barium Calcium Chromium Cobalt Copper Magnesium Manganese Nickel Potassium Silver Zinc	9.9 mg/kg 0.29 mg/kg 34.7 mg/kg 0.43 mg/kg 0.17 mg/kg 0.27 mg/kg 7.0 mg/kg 0.4 mg/kg 0.72 mg/kg 21.5 mg/kg 0.21 mg/kg 2.9 mg/kg	211A-111302-1510 211B-111302-1530 211C-111302-1540 213A-111302-1600 213B-111302-1620 213C-111302-1635 214A-111302-1650 214B-111302-1710 214C-111302-1725 215A-111402-0845 215B-111402-0900 215C-111402-0920 081A-111402-1245 081B-111402-1300 082A-111402-1345 082B-111402-1400	49.5 mg/kg 1.5 mg/kg 347 mg/kg 2.2 mg/kg 0.85 mg/kg 2.7 mg/kg 35.0 mg/kg 2.0 mg/kg 3.6 mg/kg 108 mg/kg 1.1 mg/kg 29.0 mg/kg

System Monitoring Compound Recoveries

System monitoring/surrogate compounds were added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C and 8082 to confirm the efficiency of the sample preparation procedures. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. The calculated recovery of these compounds fell within the laboratory specific quality control criteria, with the exceptions noted below. In a few instances, sample extracts required dilution prior to analysis in an effort by the laboratory to either improve instrument performance by minimizing matrix interference or enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results of the surrogate compounds with “DIL” indicating the system monitoring compound recovery could not be

calculated due to a sample extract dilution. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. In each case, the elevated reporting limits were confirmed for the level of dilution.

During the analysis of PCBs (EPA Method SW846 8082), the recovery of tetrachloro-m-xylene was greater than advisory limits in project samples 213A-111302-1600 and 215C-111402-EB. Positive results for Aroclors 1016, 1221 and 1232 should be qualified as estimated "J". Non-detected analytes do not require qualification. Additionally, the recovery of decachlorobiphenyl was greater than the advisory limits in project samples 213B-111302-1620 and 214C-111302-1725. . Positive results for Aroclors 1242, 1248, 1254, and 1260 should be qualified as estimated "J". Non-detected analytes do not require qualification.

Laboratory Control Samples (LCS), Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS/MSD and LCS analyses fell within the laboratory QA acceptance criteria.

Internal Standard Recoveries

Internal Standard compounds were added to each sample matrix prior to the analysis of organic parameters by EPA Method 8260B to quantify the amount of the target compounds detected within each sample. The calculated response of each IS compound fell within the QA/QC criteria of +100% and –50% of the corresponding CCV standard.

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were all within the acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. No qualification of the data is recommended.

ICP Serial Dilution Replicate Percent Difference

The results of the ICP Serial Dilution samples analyzed concurrently with the project samples were within compliance with the USEPA protocol criteria of less than 10% replicate percent difference (RPD) for analytes reported above the IDL in both the diluted and un-diluted sample.

Sample Data Reporting Format

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format including Forms I through IX. The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting limit values for the diluted analyses were adjusted for the level of dilution performed and the percent moisture content in solid matrices. The reporting format is complete and compliant with the objectives of the project, no corrective action is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target compounds detected below the reporting limit but above the method detection limit, and/or when target compounds were detected in the associated method/preparation blank sample. In the reporting process a "#" qualifier was used to indicate that the laboratory was unable to chromatographically resolve m-cresol and p-cresol and that the reported concentration results are most likely a combination of both target analytes. No action is recommended. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of these data is 100% with the few exceptions noted above.

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Data Usability Report (DUR)
Delphi, Dort Highway – November 2002 Sampling Event
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Group # 2K19236

Analytical results for five (5) solid samples and five (5) water samples were reviewed to evaluate the data usability. These data were assessed in accordance with guidance from the United States Environmental Protection Agency (USEPA) **National Functional Guidelines for Organic Data Review** (EPA PB99-993506), **National Functional Guidelines for Inorganic Data Review, Final** (EPA 540-R-01-008), and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996.

This DUR pertains to the following samples:

Lab Lot No.: A2K190236	Lab Lot No.: A2K210220	Lab Lot No.: A2K210249
G14A-111802-1510	G19B-111802-EB	094A-111902-1350
G14B-111802-1525	G20A-111902-TB	094B-111902-1530
	G21A-111902-1000	G23A-111902-1620
	G21B-111902-1030	G23B-111902-1700

Project samples were analyzed according to the following analytical methods:

Parameter	Analytical Method	Holding Time Criteria
Cyanide, Total	SW843 9012A	14 Days
Mercury in Liquid Waste	SW846 7470A	28 Days
Mercury in Solid Waste	SW846 7471A	28 Days
Total Residue as Percent Solids	MCAWW 160.3 MOD	28 Days
Trace Inductively Coupled Plasma Metals	SW 846 6010B	6 Months
Volatile Organic Compounds by GC/MS	SW846 8260B	14 days analysis

References:

MCAWW – "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.
SW846 – "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", 3rd Edition, November 1986 and its updates.

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- ❑ Holding Times
- ❑ GC/MS Instrument Performance Check
- ❑ Initial Calibration Procedures
- ❑ Continuing Calibration Procedures
- ❑ Blank Sample Analysis
- ❑ System Monitoring Compound Recoveries
- ❑ Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- ❑ Internal Standard Recoveries
- ❑ Duplicate Sample Analysis
- ❑ ICP Interference Check Sample Performance
- ❑ ICP Serial Dilution Replicate Percent Difference
- ❑ Sample Data Reporting Format
- ❑ Data Qualifiers
- ❑ Summary

Holding Times

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group.

GC/MS Instrument Performance Check

GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception.

Initial Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols of 30% RSD.

Continuing Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols of 25% D, with the following exception(s):

During the analysis of volatile organic compounds (EPA Method SW846 8260B), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 25%:

Inst.	Date	Target Analyte, %D	Associated Samples	Corrective Action
7	12/02 08:51	Acetone, 26.6 2-Butanone, 25.8 2-Hexanone, 33.2 Bromoform, 32.5 1,2,4-Trichlorobenzene, 36.2	G21A-111902-1000 G23A-111902-1620	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.
10	11/27 22:25	2-Butanone, 36.5 Bromomethane, 51.6 Acetone, 37.2 2-Hexanone, 38.7 1,2,4-Trichlorobenzene, 30.6	G19B-111802-EB G20A-111902-TB G21B-111902-1030	

Blank Sample Analysis

In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the common laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds. Target compounds were not detected in associated blank samples (trip, equipment, method) prepared and analyzed concurrently with the project samples, with the following exception(s):

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
G19B-111802-EB (Equip. Blank)	Chloromethane Methylcyclohexane	0.72 µg/L 0.75 µg/L	G21B-111902-1030	3.6 µg/L 3.8 µg/L

G20A-111902-TB (Trip Blank)	Acetone Methylene chloride	1.4 ppb 0.56 ppb	G21A-111902-1000 G21B-111902-1030 G23A-111902-1620 G23B-111902-1700	14 ppb 5.6 ppb
Method Blank 12/02, Inst 7	Acetone	63 µg/kg	G21A-111902-1000	630 µg/kg
Method Blank 11/27, Inst 10	Bromomethane Methylene chloride	0.34 µg/L 0.58 µg/L	G19B-111802-EB G20A-111902-TB G21B-111902-1030	1.7 µg/L 5.8 µg/L
Method Blank (Solid)	Calcium Manganese Potassium	11.9 mg/kg 0.31 mg/kg 18.7 mg/kg	094A-111902-1350	59.5 mg/kg 1.6 mg/kg 93.5 mg/kg
Method Blank (Aqueous)	Calcium Magnesium Manganese Potassium	0.23 mg/L 0.082 mg/L 0.0012 mg/L 0.26 mg/L	094B-111902-1530	1.2 mg/L 0.41 mg/L 0.06 mg/L 1.3 mg/L
Method Blank (Aqueous)	Cyanide, Total	0.0033 mgL	094B-111902-1530	0.017 mg/L

System Monitoring Compound Recoveries

System monitoring/surrogate compounds were added to each sample prior to analysis of organic parameters by EPA Method 8260B to confirm the efficiency of the sample preparation procedures. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. The calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts required dilution prior to analysis in an effort by the laboratory to either improve instrument performance by minimizing matrix interference or enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results of the surrogate compounds with "DIL" indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. In each case, the elevated reporting limits were confirmed for the level of dilution.

Laboratory Control Samples (LCS), Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS/MSD and LCS analyses fell within the laboratory QA acceptance criteria.

Internal Standard Recoveries

Internal Standard compounds were added to each sample matrix prior to the analysis of organic parameters by EPA Method 8260B to quantify the amount of the target compounds detected within each sample. The calculated response of each IS compound fell within the QA/QC criteria of +100% and –50% of the corresponding CCV standard.

Duplicate Sample Analysis

The replicate percent difference was evaluated for each duplicate sample pair in order to monitor the precision or reproducibility of the data. The RPD for each sample pair was within the QA/QC limit of 30% for aqueous samples and 50% for solid matrices. No corrective action is recommended.

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were all within the acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. No qualification of the data is recommended.

ICP Serial Dilution Replicate Percent Difference

The results of the ICP Serial Dilution samples analyzed concurrently with the project samples were within compliance with the USEPA protocol criteria of less than 10% replicate percent difference (RPD) for analytes reported above the IDL in both the diluted and un-diluted sample, with the following exception. Beryllium (RPD=29.3), Calcium (RPD=13.4), Chromium (RPD=10.3), Iron (RPD=11.1), Manganese (RPD=15.2), Nickel (RPD=17.9) and Zinc (RPD=38.7) exhibited RPD greater than the acceptance criteria, in project sample 094A-111902-1350, due to physical and chemical interference. Therefore, the results for those target analytes reported for this sample should be flagged "J" as estimated.

Sample Data Reporting Format

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format including Forms I through IX. The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting limit values for the diluted analyses were adjusted for the level of dilution performed and the percent moisture content in solid matrices. The reporting format is complete and compliant with the objectives of the project, no corrective action is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target compounds detected below the reporting limit but above the method detection limit, and/or when target compounds were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of these data is 100% with the few exceptions noted above.

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Data Usability Report (DUR)
Delphi, Dort Highway – November 2002 Sampling Event
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Group # 2K21353

Analytical results for six (6) solid samples and two (2) water samples were reviewed to evaluate the data usability. These data were assessed in accordance with guidance from the United States Environmental Protection Agency (USEPA) **National Functional Guidelines for Organic Data Review** (EPA PB99-993506), **National Functional Guidelines for Inorganic Data Review, Final** (EPA 540-R-01-008), and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996.

This DUR pertains to the following samples:

Lab Lot No.: A2K210353
484A-112002-1525
484B-112002-1535
485A-112002-1555
485B-112002-1620
486A-112002-1640
486B-112002-1645
486B-112002-TB
486B-112002-EB

Project samples were analyzed according to the following analytical methods:

Parameter	Analytical Method	Holding Time Criteria
Semivolative Organic Compounds by GC/MS	SW846 8270C	7 Days Ext./40 Days post Ext
Total Residue as Percent Solids	MCAWW 160.3 MOD	28 Days
Volatile Organic Compounds by GC/MS	SW846 8260B	14 Days

References:

MCAWW – "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.
SW846 – "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", 3rd Edition, November 1986 and its updates.

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- ❑ Holding Times
- ❑ GC/MS Instrument Performance Check
- ❑ Initial Calibration Procedures
- ❑ Continuing Calibration Procedures
- ❑ Blank Sample Analysis
- ❑ System Monitoring Compound Recoveries
- ❑ Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- ❑ Internal Standard Recoveries
- ❑ Sample Data Reporting Format
- ❑ Data Qualifiers
- ❑ Summary

Holding Times

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group.

GC/MS Instrument Performance Check

GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception.

Initial Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s).

During the analysis of volatile organic compounds (EPA Method SW846 8260B), the initial calibration standards for the following target compound(s) exhibited a relative percent deviation (%RSD) greater than the acceptance criteria of 30%:

Inst.	Date	Target Analyte, %RSD	Associated Samples	Corrective Action
12	11/08 20:30	Methylene chloride, 30.89	484A-112002-1525 484B-112002-1535 485A-112002-1555 485B-112002-1620 486A-112002-1640 486B-112002-1645	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.

Continuing Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of volatile organic compounds (EPA Method SW846 8260B), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 25%:

Inst.	Date	Target Analyte, %D	Associated Samples	Corrective Action
10	11/29 21:23	2-Butanone, 41.3 Bromomethane, 30.8 Acetone, 48.0 Methylene chloride, 26.0 2-Hexanone, 38.5 1,2,4-Trichlorobenzene, 29.2	486B-112002-TB 486B-112002-EB	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.
12	11/27 15:03	Acetone, 51.5 Cyclohexane, 25.9 Methylcyclohexane, 25.3	484B-112002-1535 485A-112002-1555 485B-112002-1620 486A-112002-1640 486B-112002-1645	
12	11/27 23:09	Bromoform, 28.7 1,2-Dibromo-3-chloropropane, 27.3	484A-112002-1525	

During the analysis of semivolatile organic compounds (EPA Method SW846 8270C), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 25%:

Inst.	Date	Target Analyte, %D	Associated Samples	Corrective Action
9	12/03 09:42	Pyrene, -25.4	484A-112002-1525 484B-112002-1535 485A-112002-1555 485B-112002-1620 486A-112002-1640 486B-112002-1645	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.

Blank Sample Analysis

In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the common laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds. Target compounds were not detected in associated blank samples (trip, equipment, method) prepared and analyzed concurrently with the project samples, with the following exception(s):

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
486B-112002-TB (Trip Blank)	Acetone 2-Butanone	2.5 ppb 1.2 ppb	484A-112002-1525 484B-112002-1535 485A-112002-1555 485B-112002-1620 486A-112002-1640 486B-112002-1645 486B-112002-EB	25 ppb 12 ppb
Method Blank 11/29, Inst 10	Bromomethane	10.6 µg/L	486B-112002-TB 486B-112002-EB	53.0 µg/L

System Monitoring Compound Recoveries

System monitoring/surrogate compounds were added to each sample prior to analysis of organic parameters by EPA Methods 8260B and 8270C to confirm the efficiency of the sample preparation procedures. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. The calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts required dilution prior to analysis in an effort by the laboratory to either improve instrument performance by minimizing matrix interference or enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results of the surrogate compounds with "DIL" indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. In each case, the elevated reporting limits were confirmed for the level of dilution.

Laboratory Control Samples (LCS), Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS/MSD and LCS analyses fell within the laboratory QA acceptance criteria.

Internal Standard Recoveries

Internal Standard compounds were added to each sample matrix prior to the analysis of organic parameters by EPA Methods 8260B and 8270C to quantify the amount of the target compounds detected within each sample. The calculated response of each IS compound fell within the QA/QC criteria of +100% and – 50% of the corresponding CCV standard.

Sample Data Reporting Format

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format including Forms I through IX. The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting limit values for the diluted analyses were adjusted for the level of dilution performed and the percent moisture content in solid matrices. The reporting format is complete and compliant with the objectives of the project, no corrective action is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target compounds detected below the reporting limit but above the method detection limit, and/or when target compounds were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of these data is 100% with the few exceptions noted above.

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Data Usability Report (DUR)
Delphi, Dort Highway– December 2002 Sampling Event
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Group # 2L11285

Analytical results for twelve (12) water samples were reviewed to evaluate the data usability. These data were assessed in accordance with guidance from the United States Environmental Protection Agency (USEPA) **National Functional Guidelines for Organic Data Review** (EPA PB99-993506), **National Functional Guidelines for Inorganic Data Review, Final** (EPA 540-R-01-088), and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996.

This DUR pertains to the following samples:

Lot No.: A2L110285	Lot No.: A2L140152
4401-121002-1330	4612-121202-TB
4413-121002-1400	4103-121202-1740
4415-121002-1430	4612-121202-1510
	4112-121302-1005
	4103-121202-EB
	4102-121302-1210
	4101-121302-1455
	4110-121302-EB
	4110-121302-1620

Project samples were analyzed according to the following analytical methods:

Parameter	Analytical Method	Holding Time Criteria
Polychlorinated Biphenyls	SW846 8082	7 Days Ext./40 Days Post Ext.
Semi-volatile Organic Compounds by GC/MS	SW846 8270C	7 Days Ext./40 Days Post Ext.
Volatile Organic Compounds by GC/MS	SW846 8260B	14 Days
Density/Specific Gravity	SM 2710F	NA
Viscosity	ASTM D2196	NA

References:

SW846 – "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", 3rd Edition, November 1986 and its updates.
SM- Standard Methods, 18th Edition and its updates.
ASTM- "American Society for Testing and Materials", Volume 04.08, 2002 and its updates.

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- ❑ Holding Times
- ❑ GC/MS Instrument Performance Check
- ❑ Initial Calibration Procedures
- ❑ Continuing Calibration Procedures
- ❑ Blank Sample Analysis
- ❑ System Monitoring Compound Recoveries
- ❑ Laboratory Control Samples, Matrix Spikes/Matrix Spike Duplicate Recoveries
- ❑ Internal Standard Recoveries
- ❑ Sample Data Reporting Format
- ❑ Data Qualifiers
- ❑ Summary

Holding Times

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group.

GC/MS Instrument Performance Check

GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception.

Initial Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols.

Continuing Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of volatile organic compounds (SW846 8260B), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 25%.

Inst.	Date	Target Analyte, %D	Associated Samples	Corrective Action
12	12/19/02, 20:13	Bromoform, 25.2	4401-121002-1330 4413-121002-1400 4415-121002-1430	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.

Blank Sample Analysis

Target compounds were not detected in associated blanks (trip, equipment, method) prepared and analyzed concurrently with the project samples, with the following exceptions. (In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for common laboratory contaminants (methylene chloride, acetone, 2-butanone, and cyclohexane), or 5 times (5X) the amount for other target compounds.)

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if ≤ to this value
Trip Blank 4612-121202-TB	Methylene chloride	0.38 µg/L	4103-121202-1740 4612-121202-1510 4112-121302-1005 4103-121202-EB 4102-121302-1210 4101-121302-1455 4110-121302-EB 4110-121302-1620	3.8 µg/L
Equipment Blank 4103-121202-EB	Acetone	5.4 µg/L	4103-121202-1740 4612-121202-1510	54 µg/L

Equipment Blank 4110-121302-EB	1,4-Dichlorobenzene	0.42 µg/L	4112-121302-1005 4102-121302-1210 4101-121302-1455 4110-121302-1620	2.1 µg/L

System Monitoring Compound Recoveries

System monitoring/surrogate compounds were added to each sample prior to analysis of organic parameters by EPA Method 8260B, 8270C, 8082 to confirm the efficiency of the sample preparation procedures. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. The calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts required dilution prior to analysis in an effort by the laboratory to either improve instrument performance by minimizing matrix interference or enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results of the surrogate compounds with "DIL" indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. In each case, the elevated reporting limits were confirmed for the level of dilution.

Laboratory Control Samples, Matrix Spikes/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS and LCS analyses fell within the laboratory QA acceptance criteria.

Internal Standard Recoveries

Internal Standard compounds were added to each sample matrix prior to the analysis of organic parameters by EPA Methods 8260B, 8270C and 8082 to quantify the amount of the target compounds detected within each sample. The calculated response of each IS compound fell within the QA/QC criteria of +100% and – 50% of the corresponding CCV standards with the following exception. The internal standard Perylene-d12 exhibited a percent recovery greater than the acceptance criteria in project sample 4415-121002-1430. Therefore, positive results for Di-n-octylphthalate, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene and Benzo(g,h,i)perylene should be qualified "J" and non-detects should not be qualified for sample 4415-121002-1430.

Sample Data Reporting Format

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format including Forms I through IX. The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting limit values for the diluted analyses were adjusted for the level of dilution performed and the percent moisture content in solid matrices. The reporting format is complete and compliant with the objectives of the project, no corrective action is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target compounds detected below the reporting limit but above the method detection limit, and/or when target compounds were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of these data is 100%.

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Data Usability Report (DUR)
Delphi, Dort Highway– December 2002 Sampling Event
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Group # 2L17280

Analytical results for eight (8) water samples were reviewed to evaluate the data usability. These data were assessed in accordance with guidance from the United States Environmental Protection Agency (USEPA) **National Functional Guidelines for Organic Data Review** (EPA PB99-993506), **National Functional Guidelines for Inorganic Data Review, Final** (EPA 540-R-01-088), and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996.

This DUR pertains to the following samples:

Lot No.: A2L170280	Lot No.: A2L180238
4113-121602-TB	4104-121702-0950
4113-121602-1030	4106-121702-1300
4119-121602-1420	4106-121702-TB
4113-121602-EB	4106-121702-EB

Project samples were analyzed according to the following analytical methods:

Parameter	Analytical Method	Holding Time Criteria
Ammonia Nitrogen	MCAWW 350.3	28 days
Chloride (Colorimetric, Automated Ferricyanide)	MCAWW 325.2	28 days
Dissolved Gases in Water	RSK SOP-175	14 days
Dissolved Organic Carbon	MCAWW 415.1	28 days
Inductively Coupled Plasma Metals	SW 846 6010B	6 months
Nitrate	MCAWW 353.2	28 days
Sulfate	MCAWW 375.4	28 days
Total Phosphorus	MCAWW 365.2	28 days
Total Kjeldahl Nitrogen	MCAWW 351.3	28 days
Volatile Organic Compounds by GC/MS	SW846 8260B	14 Days

References:

SW846 – "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", 3rd Edition, November 1986 and its updates.
MCAWW- "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.
RSK- Sample Prep and Calculations for Dissolved Gas Analysis in Water Samples Using a GC Headspace Equilibration Technique, RSKSOP-175, REV. 0, 8/11/94, USEPA Research Lab.

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- ❑ Holding Times
- ❑ GC/MS Instrument Performance Check
- ❑ Initial Calibration Procedures
- ❑ Continuing Calibration Procedures
- ❑ Blank Sample Analysis
- ❑ System Monitoring Compound Recoveries
- ❑ Laboratory Control Samples, Matrix Spikes/Matrix Spike Duplicate Recoveries
- ❑ Internal Standard Recoveries
- ❑ ICP Interference Check Sample Performance
- ❑ ICP Serial Dilution Replicate Percent Difference
- ❑ Sample Data Reporting Format

- ❑ Data Qualifiers
- ❑ Summary

Holding Times

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group.

GC/MS Instrument Performance Check

GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception.

Initial Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols.

Continuing Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of volatile organic compounds (SW846 8260B), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 25%.

Inst.	Date	Target Analyte, %D	Associated Samples	Corrective Action
7	12/23 07:40	2-Butanone, -32.3 2-Hexanone, -36.7 1,2,4-Trichlorobenzene, -36.2	4104-121702-0950 4106-121702-1300 4106-121702-TB 4106-121702-EB	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.
10	12/23 09:40	Acetone, 45.5 2-Butanone, -35.0 2-Hexanone, -32.7	4113-121602-TB 4113-121602-1030 4119-121602-1420 4113-121602-EB	

Blank Sample Analysis

Target compounds were not detected in associated blanks (trip, equipment, method) prepared and analyzed concurrently with the project samples, with the following exceptions. (In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for metals and common laboratory contaminants (methylene chloride, acetone, 2-butanone, and cyclohexane), or 5 times (5X) the amount for other target compounds.)

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if ≤ to this value
Trip Blank 4113-121602-TB	2-Butanone Carbon disulfide	0.64 µg/L 0.29 µg/L	4113-121602-1030 4119-121602-1420 4113-121602-EB	6.4 µg/L 1.45 µg/L

Equipment Blank 4113-121602-EB	1,4-Dichlorobenzene	0.43 µg/L	4113-121602-1030 4119-121602-1420	2.15 µg/L
Trip Blank 4106-121702-TB	Acetone Methylene chloride	1.6 µg/L 1.4µg/L	4104-121702-0950 4106-121702-1300 4106-121702-EB	16 µg/L 14 µg/L
Equipment Blank 4106-121702-EB	Acetone	1.6 µg/L	4104-121702-0950 4106-121702-1300	16 µg/L
Method Blank, I-5 12/23, 16:44	Manganese (Total Metals)	0.00086 mg/L	4119-121602-1420 4104-121702-0950 4106-121702-1300	0.0086 mg/L
Method Blank, I-5 12/23, 16:44	Manganese (Dissolved Metals)	0.00086 mg/L	4119-121602-1420 4104-121702-0950 4106-121702-1300	0.0086 mg/L
Method Blank	Nitrate Total Kjeldahl Nitrogen	0.03 mg/L 140 mg/L	4106-121702-1300 4102-121702-0950 4119-121602-1420	0.15 mg/L 700 mg/L

System Monitoring Compound Recoveries

System monitoring/surrogate compounds were added to each sample prior to analysis of organic parameters by EPA Method 8260B to confirm the efficiency of the sample preparation procedures. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. The calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts required dilution prior to analysis in an effort by the laboratory to either improve instrument performance by minimizing matrix interference or enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results of the surrogate compounds with "DIL" indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. In each case, the elevated reporting limits were confirmed for the level of dilution.

Laboratory Control Samples, Matrix Spikes/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS and LCS analyses fell within the laboratory QA acceptance criteria.

Internal Standard Recoveries

Internal Standard compounds were added to each sample matrix prior to the analysis of organic parameters by EPA Method 8260B to quantify the amount of the target compounds detected within each sample. The calculated response of each IS compound fell within the QA/QC criteria of +100% and –50% of the corresponding CCV standards.

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were all within the acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. No qualification of the data is recommended.

ICP Serial Dilution Replicate Percent Difference

ICP – The Serial Dilution RPD Report was performed on another client's sample from the same quality control batch for metals analyzed using Method 6010B.

Sample Data Reporting Format

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format including Forms I through IX. The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting limit values for the diluted analyses were adjusted for the level of dilution performed and the percent moisture content in solid matrices. The reporting format is complete and compliant with the objectives of the project, no corrective action is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target compounds detected below the reporting limit but above the method detection limit, and/or when target compounds were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of these data is 100%.

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Data Usability Report (DUR)
Delphi, Dort Highway– December 2002 Sampling Event
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Group # 2L19133

Analytical results for nine (9) water samples were reviewed to evaluate the data usability. These data were assessed in accordance with guidance from the United States Environmental Protection Agency (USEPA) **National Functional Guidelines for Organic Data Review** (EPA PB99-993506), **National Functional Guidelines for Inorganic Data Review, Final** (EPA 540-R-01-088), and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996.

This DUR pertains to the following samples:

Lot No.: A2L190133	**Lot No.: A2L200184**
4107-121802-1030	4121-121902-1450
4107-121802-TB	4121-121902-TB
4114-121802-1340	4121-121902-EB
4120-121802-1520	
4120-121802-EB	
4114-121802-DUP	

Project samples were analyzed according to the following analytical methods:

Parameter	**Analytical Method**	**Holding Time Criteria**
Ammonia Nitrogen	MCAWW 350.3	28 days
Chloride (Colorimetric, Automated Ferricyanide)	MCAWW 325.2	28 days
Dissolved Gases in Water	RSK SOP-175	14 days
Dissolved Organic Carbon	MCAWW 415.1	28 days
Inductively Coupled Plasma Metals	SW 846 6010B	6 months
Nitrate	MCAWW 353.2	28 days
Sulfate	MCAWW 375.4	28 days
Total Phosphorus	MCAWW 365.2	28 days
Total Kjeldahl Nitrogen	MCAWW 351.3	28 days
Volatile Organic Compounds by GC/MS	SW846 8260B	14 Days

References:

SW846 – "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", 3rd Edition, November 1986 and its updates.
MCAWW- "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.
RSK- Sample Prep and Calculations for Dissolved Gas Analysis in Water Samples Using a GC Headspace Equilibration Technique, RSKSOP-175, REV. 0, 8/11/94, USEPA Research Lab.

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- ❑ Holding Times
- ❑ GC/MS Instrument Performance Check
- ❑ Initial Calibration Procedures
- ❑ Continuing Calibration Procedures
- ❑ Blank Sample Analysis
- ❑ System Monitoring Compound Recoveries
- ❑ Laboratory Control Samples, Matrix Spikes/Matrix Spike Duplicate Recoveries
- ❑ Internal Standard Recoveries
- ❑ ICP Interference Check Sample Performance

- ICP Serial Dilution Replicate Percent Difference
- Field Duplicate Replicate Percent Difference
- Sample Data Reporting Format
- Data Qualifiers
- Summary

Holding Times

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group.

GC/MS Instrument Performance Check

GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception.

Initial Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols.

Continuing Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of volatile organic compounds (SW846 8260B), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 25%.

Inst.	Date	Target Analyte, %D	Associated Samples	Corrective Action
10	12/30 09:56	Acetone, 48.0 2-Butanone, -39.4 2-Hexanone, -37.3	4121-121902-1450 4121-121902-TB 4121-121902-EB	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.

Blank Sample Analysis

Target compounds were not detected in associated blanks (trip, equipment, method) prepared and analyzed concurrently with the project samples, with the following exceptions. (In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for metals and common laboratory contaminants (methylene chloride, acetone, 2-butanone, and cyclohexane), or 5 times (5X) the amount for other target compounds.)

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if ≤ to this value
Trip Blank 4107-121802-TB	Acetone Methylene chloride	1.5 µg/L 1.6 µg/L	4107-121802-1030 4114-121802-1340 4120-121802-1520 4120-121802-EB	15 µg/L 16 µg/L

			4114-121802-DUP	
Equipment Blank 4120-121802-EB	1,4-Dichlorobenzene	0.38 µg/L	4107-121802-1030 4114-121802-1340 4120-121802-1520 4120-121802-TB 4114-121802-DUP	1.9 µg/L
Trip Blank 4121-121902-TB	Methylene chloride	1.5 µg/L	4121-121902-1450 4121-121902-EB	15 µg/L
Equipment Blank 4121-121902-EB	1,4-Dichlorobenzene	0.38 µg/L	4121-121902-1450 4121-121902-TB	1.9 µg/L
Method Blank, I-10 12/30, 11:39	Bromoethane	0.34 µg/L	4121-121902-1450 4121-121902-TB 4121-121902-EB	1.7 µg/L
Method Blank, I-5 12/28, 11:56	Manganese (Total Metals)	0.00089 mg/L	4107-121802-1030	0.0089 mg/L
Method Blank, I-5 12/23, 16:44	Manganese (Dissolved Metals)	0.00089 mg/L	4107-121802-1030	0.0089 mg/L

System Monitoring Compound Recoveries

System monitoring/surrogate compounds were added to each sample prior to analysis of organic parameters by EPA Method 8260B to confirm the efficiency of the sample preparation procedures. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. The calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts required dilution prior to analysis in an effort by the laboratory to either improve instrument performance by minimizing matrix interference or enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results of the surrogate compounds with "DIL" indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. In each case, the elevated reporting limits were confirmed for the level of dilution.

Laboratory Control Samples, Matrix Spikes/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of LCS analyses fell within the laboratory QA acceptance criteria. The reported recovery of MS analyses were above acceptance criteria for Total Kjeldahl Nitrogen analysis. Results above the MDL should be qualified as "J" and non-detect results should not be qualified for sample 4107-121802-1030.

Internal Standard Recoveries

Internal Standard compounds were added to each sample matrix prior to the analysis of organic parameters by EPA Method 8260B to quantify the amount of the target compounds detected within each sample. The calculated response of each IS compound fell within the QA/QC criteria of +100% and –50% of the corresponding CCV standards.

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were all within the acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. No qualification of the data is recommended.

ICP Serial Dilution Replicate Percent Difference

ICP – The Serial Dilution RPD Report was performed on another client's sample from the same quality control batch for metals analyzed using Method 6010B.

Field Duplicate Replicate Percent Difference

The replicate percent difference was evaluated for each field duplicate sample pair in order to monitor the precision or reproducibility of the data. The RPD for sample pairs associated with this SDG were within QA/QC limits.

Sample Data Reporting Format

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format including Forms I through IX. The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting limit values for the diluted analyses were adjusted for the level of dilution performed and the percent moisture content in solid matrices. The reporting format is complete and compliant with the objectives of the project, no corrective action is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target compounds detected below the reporting limit but above the method detection limit, and/or when target compounds were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of these data is 100%.

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Data Usability Report (DUR)
Delphi -Flint – February 2003 Sampling Event
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Groups # A3B250173, A3B260163, A3B270171, A3B280155

Analytical results for eight (8) solid samples, thirteen (13) aqueous samples, and six (6) quality control samples were reviewed to evaluate the data usability. These data were assessed in accordance with guidance from the United States Environmental Protection Agency (USEPA) **National Functional Guidelines for Organic Data Review** (EPA 540/R-99/008), **National Functional Guidelines for Inorganic Data Review, Final** (EPA 540-R-01-088), and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996. This DUR pertains to the following samples:

SDG: A3B250173	SDG: A3B260163	SDG: A3B270171	SDG: A3B280155
G61A-022403-1000	G62A-022503-0930	G64A-022603-0845	G66A-022703-0845
G61D-022403-1230	G62D-022503-1200	G64D-022603-1150	G66B-022703-0930
G61E-022403-1300	G63A-022503-1400	G64D-022603-D	G66D-022703-1130
G61D-022403-TB	G63D-022503-1630	G64E-022603-1220	G66D-022703-TB
	G63D-022503-TB	G65A-022603-1330	G66E-022703-1150
	G63E-022503-1700	G65D-022603-1600	G67A-022703-1315
		G65E-022603-1630	G67D-022703-1545
		G65D-022603-TB	G67E-022703-1615
			G67E-022703-D

Project samples were analyzed according to the following analytical methods:

Parameter	Analytical Method	Holding Time Criteria
Total Residue as Percent Solids	MCAWW 160.3 MOD	28 Days
Volatile Organics by GC/MS	SW846 8260B	14 Days

References:
MCAWW – "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.
SW846 – "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", 3rd Edition, November 1986 and its updates.

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- Holding Times
- Blank Sample Analysis
- System Monitoring Compound Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Sample Data Reporting Format
- Data Qualifiers
- Summary

Holding Times

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group. No qualification of the data is recommended.

Blank Sample Analysis

In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for inorganic parameters and the common organic laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds. Target compounds were not detected in associated blank samples (trip, equipment, method) prepared and analyzed concurrently with the project samples, with the following exception(s):

SDG# A3B250173

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Trip Blank G61D-022403-TB	Chloroform	0.46 µg/L	G61A-022403-1000 G61D-022403-1230 G61E-022403-1300	2.3 µg/L
Method Blank 2/25 Prep Batch: 3061129	Ethylbenzene	9.2 µg/kg	G61A-022403-1000	46.0 µg/kg

SDG# A3B260163

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Trip Blank G63D-022503-TB	Chloroform	0.43 µg/L	G62A-022503-0930 G62D-022503-1200 G63A-022503-1400 G63D-022503-1630 G63E-022503-1700	2.15 µg/L
Method Blank 2/28, Prep Batch 3062145	Methylene chloride	0.49 µg/L	G62D-022503-1200 G63D-022503-1630 G63D-022503-TB G63E-022503-1700	4.9 µg/kg
Method Blank 2/26, Prep Batch 3063151	Ethylbenzene Methylene chloride	8.0 µg/kg 25 µg/kg	G62A-022503-0930 G63A-022503-1400	40 µg/kg 250 µg/kg

SDG# A3B270171

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank 3/3, Prep Batch 3063372	Methylene chloride	0.57 µg/L	G64D-022603-1150 G64D-022603-D G64E-022603-1220 G65D-022603-1600 G65E-022603-1630 G65D-022603-TB	5.7 µg/L
Method Blank 3/4, Prep Batch 3064162	Methylene chloride	24 µg/kg	G64A-022603-0845 G65A-022603-1330	240 µg/kg

Trip Blank G65D-022603-TB	Chloroform	0.44 µg/L	G64A-022603-0845 G64D-022603-1150 G64D-022603-D G64E-022603-1220 G65A-022603-1330 G65D-022603-1600 G65E-022603-1630	2.2 µg/L

SDG# A3B280155

Blank	Target Compound	Conc.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank 3/4, Prep Batch 3064162	Methylene chloride	24 µg/kg	G66A-022703-0845 G66B-022703-0930 G67A-022703-1315	240 µg/kg
Trip Blank	Chloroform Methylene chloride	0.43 µg/L 2.9 µg/L	G66A-022703-0845 G66B-022703-0930 G66D-022703-1130 G66E-022703-1150 G67A-022703-1315 G67D-022703-1545 G67E-022703-1615 G67E-022703-D	2.15 µg/L 29 µg/L

System Monitoring Compound Recoveries

System monitoring/surrogate compounds were added to each sample prior to analysis of organic parameters by EPA Method 8260B to confirm the efficiency of the sample preparation procedures. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. The calculated recovery of these compounds fell within the laboratory specific quality control criteria. No qualification of the data is recommended.

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS/MSD and LCS analyses fell within the laboratory QA acceptance criteria with the following exception(s).

SDG# A3B260163

Sample	Target Analyte	%R	Associated Project Samples	Action
LCS	1,1-Dichloroethene	147	G62A-022503-0930 G63A-022503-1400	Results greater than the MDL are qualified as "J", estimated and non-detected analytes should not be qualified.

Due to insufficient sample volume, the lab did not re-prepare and reanalyze the affected project samples.

Sample Data Reporting Format

The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting limit values for the diluted analyses were adjusted for the level of dilution performed and the percent moisture content in solid matrices. The reporting format is complete and compliant with the objectives of the project, no corrective action is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target compounds detected below the reporting limit but above the method detection limit, and/or when target compounds were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Organic analyses samples that contained concentrations of target analytes at a reportable level in the associated method blanks were flagged by the laboratory with a "B". If the target analyte concentration was greater than 10 times (10X) the amount in any blank for the common laboratory contaminants or 5 times (5X) the amount for other target compounds, the "B" qualifier was not carried forward for database input; if less than the 10X or 5X rule the "B" qualifier was replaced with a "U". The "J" qualifier, which indicates an estimated value because the result was between the MDL and RL was carried through to the database.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of these data is 100% with the few exceptions noted above.

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49017-026 - SDG#: 3E06106

A. SAMPLE RECIEPT/ CHAIN OF CUSTODY

1. Samples were collected on May 5 and May 6, 2003 and received at the laboratory on May 6 and May 7, 2003.
Sample cooler was (were) received at temperature(s) of 5.1°C and 4.1°C, with wet ice present.

Parameter	Analytical Method	Holding Time Criteria
Cyanide, Total	SW846 9012A	14 Days
Mercury in Solid Waste (Manual Cold – Vapor)	SW846 7471A	28 Days
Semi-volatile Organic Compounds by GC/MS	SW846 8270C	7 Days Ext./40 Days Post Ext.
Total Residue as Percent Solids	MCAWW 160.3 MOD	7 Days
Trace Inductively Coupled Plasma Metals	SW846 6010B	6 months
Volatile Organic Compounds by GC/MS	SW846 8260B	14 Days

List all project samples in table below. *Identify field QC samples and potential problem samples.*

Lab ID	Sample ID	Matrix	Comments
A3E060106	4168D-050503-1315	AQ	
	4168D-050503-TB	AQ	TRIP BLANK
	4168E-050503-1335	AQ	
	4168F-050503-1355	AQ	
	4169D-050503-1635	AQ	
	4169E-050503-1705	AQ	
	4169F-050503-1805	AQ	
A3E070149	4170D-050603-TB	AQ	TRIP BLANK
	4170D-050603-0925	AQ	
	4170E-050603-0955	AQ	
	4170F-050603-1015	AQ	
	4170F-050603-FD	AQ	FIELD DUPLICATE (4170F-050603-1015)
	4268A-050603-1115	SO	
	4268B-050603-1125	SO	
	4268C-050603-1135	SO	
	4269A-050603-1155	SO	
	4269B-050603-1205	SO	
	4269C-050603-1215	SO	

2. Case Narrative Issues & Miscellaneous Comments.
VOCs - The pH of sample 4168E-050503-1335 was greater than 2.

Metals - No ICP Form IX provided for batch 3128114. The serial dilution was performed on a different client's sample from the same QC batch.

B. VOCs (EPA Method 8260B)

Sample ID.	Inst.	Date	Time	Comments
4168D-050503-1315	12	5/8/03	19:26	
4168D-050503-TB	12	5/8/03	19:49	TB-ND
4168E-050503-1335	12	5/8/03	18:40	
4168F-050503-1355	12	5/8/03	20:11	
4169D-050503-1635	12	5/8/03	19:03	
4169E-050503-1705	12	5/8/03	20:34	
4169F-050503-1805	12	5/8/03	20:56	
4170D-050603-TB	7	5/9/03	13:50	TB-Acetone 1.6 ppb
4170D-050603-0925	7	5/9/03	14:11	

4170E-050603-0955	7	5/9/03	14:33	
4170F-050603-1015	7	5/9/03	14:55	
4170F-050603-FD	7	5/9/03	15:17	FD-Trichloroethene 0.61 ppb
4268A-050603-1115	8	5/11/03	18:32	
4268B-050603-1125	8	5/11/03	18:56	
4268C-050603-1135	8	5/11/03	19:20	
4269A-050603-1155	8	5/11/03	19:44	
4269B-050603-1205	8	5/11/03	20:09	
4269C-050603-1215	8	5/11/03	20:33	

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)**

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: If holding times were not met, positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

2. **GC/MS Instrument Performance Check.** GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. **(Y)**

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: Refer to the Functional Guidelines for Organic Data Review, pages 10-11 for specific actions.

3. **Initial Calibration Procedures.** Were Initial Calibration Procedures met? **(N)**

Inst.	Date/ Time	Target Analyte, %RSD	Associated Samples	Corrective Action
7	5/1/03 13:51	None		Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
8	4/28/03 08:01	Acetone, 42.620% Methylene Chloride, 81.068%	4268A-050603-1115 4268B-050603-1125 4268C-050603-1135 4269A-050603-1155 4269B-050603-1205 4269C-050603-1215	
12	4/19/03 18:29	Acetone, 37.655%	4168D-050503-1315 4168D-050503-TB 4168E-050503-1335 4168F-050503-1355 4169D-050503-1635 4169E-050503-1705 4169F-050503-1805	

4. **Continuing Calibration Procedures.** Were Continuing Calibration Procedures met? **(N)** *(if NO, list non-compliant instrument, target analytes and affected samples)*. (Percent Drift (%D) must be less than or equal to 25%)

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action

7	5/9/03 09:02	4-Methyl-2-pentanone, 27.5%	4170D-050603-TB 4170D-050603-0925 4170E-050603-0955 4170F-050603-1015 4170F-050603-FD	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
8	5/11/03 13:42	1,2-Dibromo-3-chloropropane, 37.6% 1,2,4-Trichlorobenzene, 34.5%	4268A-050603-1115 4268B-050603-1125 4268C-050603-1135 4269A-050603-1155 4269B-050603-1205 4269C-050603-1215	
12	5/8/03 16:47	None		

5. **Blank Sample Analysis (Trip, Equipment, Field, Method).** Were target VOCs identified in any Blank? **(Y) / (N)** *(if YES, list type of blank, target analyte concentration and affected samples.)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Field Blank 4170F-050603-FD	Trichloroethene	0.61 µg/L	4170D-050603-TB 4170D-050603-0925 4170E-050603-0955 4170F-050603-1015	3.05 µg/L
Trip Blank 4170D-050603-TB	Acetone	1.6 µg/L	4170D-050603-0925 4170E-050603-0955 4170F-050603-1015 4268A-050603-1115 4268B-050603-1125 4268C-050603-1135 4269A-050603-1155 4269B-050603-1205 4269C-050603-1215	16.0 µg/L
Method Blank, I-7 5/9/03, 10:30	Methylene Chloride	0.68 µg/L	4170D-050603-0925 4170E-050603-0955 4170F-050603-1015	6.8 µg/L
Method Blank, I-8 5/11/03, 18:08	None			
Method Blank, I-12 5/8/03, 18:18	None			
Method Blank, I-12 5/9/03, 01:52	None			
Method Blank, I-12 5/9/03, 02:14	None			

<u>Action:</u> In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the common laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane), or 5 times (5X) the amount for other target compounds.

NOTE :Trip blank associated samples include all samples shipped within the same sample cooler. Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

6. System Monitoring Compounds Recoveries. Were surrogate compound recoveries outside acceptance criteria specified by the laboratory? **(N)**

Surrogate Percent Recovery Criteria			
Surrogate		**Aqueous Matrix**	**Solid Matrix**
Dibromofluoromethane	SRG01	73-112	59-138
1,2-Dichloroethane-d4	SRG02	61-128	61-130
Toluene-d8	SRG03	76-110	60-143
4-Bromofluorobenzene	SRG04	74-116	47-158

Project Sample ID	SRG01 %R	SRG02 %R	SRG03 %R	SRG04 %R

Action: If the surrogate percent recovery is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the surrogate percent recovery is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "UJ". If the surrogate percent recovery is less than 10% associated target analyte positive results are qualified "J" and non-detects are qualified "R".

7. Laboratory Control Samples (LCS), Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries. Were percent recoveries outside acceptance criteria in either the LCS/LCSD or MS/MSD? **(N)**

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
		[Insert %R Range]		
		[Insert %R Range]		

Action: If the LCS %R is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the LCS %R is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "R". If the MS/MSD is from a project sample use the same rules as the LCS/LCSD and apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

8. Internal Standard Recoveries. Did the calculated response of each IS compound fall within the QA/QC criteria of +100% and –50% of the corresponding CCV standard? **(Y)**

Project Sample ID	Non-Compliant IS	% Recovery	Analytes Affected
		[Insert %R]	
		[Insert %R]	

Action: If the internal standard is greater than the upper limit, positive results for the associated target analytes are qualified "J" and non-detects should not be qualified. If the internal standard is less than the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "UJ". If the internal standard is less than 10% of the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "R".

C. SVOCs (EPA Method 8270C)

Sample ID.	Inst.	Date Extracted	Date Analyzed	Time	Comments
4268A-050603-1115	9	5/6/03	5/11/03	07:00	
4268B-050603-1125	9	5/6/03	5/11/03	06:02	
4268C-050603-1135	9	5/6/03	5/11/03	02:39	
4269A-050603-1155	9	5/6/03	5/11/03	06:31	
4269B-050603-1205	9	5/6/03	5/11/03	02:10	
4269C-050603-1215	9	5/6/03	5/11/03	03:08	

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)**

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: If holding times were not met, positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

2. **GC/MS Instrument Performance Check.** GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. **(Y)** *(if NO, list non compliant instrument/affected samples)*

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: Refer to the Functional Guidelines for Organic Data Review, pages 49-50 for specific actions.

3. **Initial Calibration Procedures.** Were Initial Calibration Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (Percent Relative Standard Deviation (%RSD) must be less than or equal to 30%)

Inst.	Date/ Time	Target Analyte, %RSD	Associated Samples	Corrective Action
9	5/3/03 17:36	None		Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.

4. **Continuing Calibration Procedures.** Were Continuing Calibration Procedures met? **(N)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (Percent Drift (%D) must be less than or equal to 25%)

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
9	5/10/03 19:23	2,4 Dinitrophenol, 28.6% bis (2-ethylhexyl)-Phthalate, 27.6%	4268A-050603-1115 4268B-050603-1125 4268C-050603-1135 4269A-050603-1155 4269B-050603-1205 4269C-050603-1215	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.

5. **Blank Sample Analysis (Trip, Equipment, Field, Method).** Were target SVOCs identified in any Blank? **(N)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank, I-9 5/10/03, 21:19	None			

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the common laboratory contaminants (phthalate esters), or 5 times (5X) the amount for other target compounds.

6. **System Monitoring Compounds Recoveries.** Were surrogate compound recoveries outside acceptance criteria specified by the laboratory? **(N)** *(if YES, indicate surrogate recovery criteria, project sample ID and %R)*

Surrogate Percent Recovery Criteria			
Surrogate		**Aqueous Matrix**	**Solid Matrix**
Nitrobenzene-d5	SRG01		42-100
2-Fluorobiphenyl	SRG02		43-100
Terphenyl-d14	SRG03		37-137
Phenol-d5	SRG04		25-115
2-Fluorophenol	SRG05		11-116
2,4,6-Tribromophenol	SRG06		35-116

Project Sample ID	SRG01 %R	SRG02 %R	SRG03 %R	SRG04 %R	SRG05 %R	SRG06 %R

Action: If the surrogate percent recovery is greater than the upper acceptance limit associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the surrogate percent recovery is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "UJ". If the surrogate percent recovery is less than 10% associated target analyte positive results are qualified "J" and non-detects are qualified "R".

7. **Laboratory Control Samples (LCS), Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries.** Were percent recoveries outside acceptance criteria in either the LCS/LCSD or MS/MSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
		[Insert %R Range]		
		[Insert %R Range]		

Action: If the LCS %R is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the LCS %R is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "R". If the MS/MSD is from a project sample use the same rules as the LCS/LCSD and apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

8. **Internal Standard Recoveries.** Did the calculated response of each IS compound fall within the QA/QC criteria of +100% and –50% of the corresponding CCV standard? **(Y)** *(if NO, indicate project sample, non-compliant IS, %R, analytes affected-obtain from laboratory SOP)*

Project Sample ID	Non-Compliant IS	% Recovery	Analytes Affected
		[Insert %R]	
		[Insert %R]	

Action: If the internal standard is greater than the upper limit, positive results for the associated target analytes are qualified "J" and non-detects should not be qualified. If the internal standard is less than the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "UJ". If the internal standard is less than 10% of the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "R".

E. METALS (SW846 6010B, ICP-AES)

Sample ID.	Prep Batch	Date	Time	Comments
4268A-050603-1115	3128114	05/06	11:15	
4268B-050603-1125	3128114	05/06	11:25	
4268C-050603-1135	3128114	05/06	11:35	
4269A-050603-1155	3128114	05/06	11:55	
4269B-050603-1205	3128114	05/06	12:05	

4269C-050603-1215	3128114	05/06	12:15	

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)** *(if NO, list non-compliant samples)*

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: If aqueous sample pH ³2, positive results are qualified "J", estimated and non-detected analytes as "R", rejected. If held > 180 days, positive results are qualified "J", estimated and non-detected analytes as "R", rejected

2. **Initial Calibration Verification (ICV) Procedures.** Were ICV Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (*Must be calibrated once every 24 hours. Acceptance criteria 70-130 %R for Antimony, Lead, and Thallium, 80-120 %R for Mercury and 90-110% R for all other metals*).

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the ICV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the ICV %R falls in the range 75-89% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the ICV %R falls in the range 111-125% results above the MDL are qualified as estimated "J", and non-detects should not be qualified. If the ICV %R is >125% results above the MDL are qualified as estimated "J", and non-detects are qualified "R". If the ICV %R is > 160% all results above the MDL are rejected "R".

3. **Continuing Calibration Verification Procedures.** Were CCV Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (*Must be calibrated every 2 hours. Acceptance criteria 70-130 %R for Antimony, Lead, and Thallium, 80-120 %R for Mercury, and 90-110% recovery for all other metals*).

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the ICV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the CCV %R falls in the range 75-89% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the CCV %R falls in the range 111-125% results above the MDL are qualified as estimated "J", and non-detects should not be qualified. If the CCV %R is >125% results above the MDL are qualified as estimated "J", and non-detects are qualified "R". If the CCV %R is > 160% all results above the MDL limit are rejected "R".

4. **Blank Sample Analysis (Equipment, Field, Method).** Were target Metals identified in any Blank? **(N)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank	Barium	0.18 mg/L	4286A-050603-1115	0.90 mg/L
Prep Batch 3128114	Calcium	36.6 mg/L	4268B-050603-1125	183.0 mg/L
	Copper	0.28 mg/L	4268C-050603-1135	2.8 mg/L
	Magnesium	9.0 mg/L	4269A-050603-1155	45.0 mg/L
	Maganese	0.099 mg/L	4269B-050603-1205	0.495 mg/L
	Potassium	28.6 mg/L	4269C-050603-1215	143.0 mg/L

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the target analytes.

NOTE : Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

5. **Laboratory Control Samples (LCS). .** Were percent recoveries outside acceptance criteria in either the LCS or LCSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

(Serves to monitor the overall performance of each step during the analysis, including the sample preparation. All aqueous LCS %R's must fall within the control limits of 80-120%, except for Antimony and Silver which have no fixed control limits.)

LCS ID	Target Analyte	%R	Associated Project Samples	Action

Action: For an aqueous LCS if the %R is 50-79%, qualify results ³MDL as "J" and non-detects as "UJ". If the %R is >120%, qualify results ³MDL as "J" and non-detects should not be qualified. If the %R is <50%, qualify results ³MDL as "J" and non-detects as "R". If the %R is >150%, qualify all results as "R". For the soil LCS, if the %R is > the upper limit qualify results ³MDL as "J" and non-detects should not be qualified. If the %R is < the lower limit qualify results ³MDL as "J" and non-detects as "UJ".

6. **Duplicate Sample Analysis.** Were the calculated % RPD values within the acceptance criteria (20%) for all target analytes greater than **5X** the MDL? **No duplicate samples were taken.**

Sample ID	Target Analyte	RPD	Associated Samples	Recommendation
				Qualify results greater than the MDL as estimated "J", and non-detects as estimated "UJ".

Action: Analytes with RPDs greater than 20% should be qualified "J" and non-detects qualified "UJ".

7. **Contract Required Detection Limit (CRDL) Standard:** Were target anlayte reporting limits (RL) below the CRDL? **(Y)** *(if NO, list target analyte, RL, CRDL and indicate reason why the RL was > the CRDL, e.g. dilution for high target compound detection)*

Sample ID	Target Analyte	RL	CRDL	Reason why the RL was > the CRDL

8. **Interference Check Standard (ICS):** Were all ICS recoveries +/- 20% of the true value? **(Y)** (if NO, list ICS, target analyte(s), %R and affected samples)

ICS ID	Target Analyte	%R	Affected Samples

Action: Reported Results above the RL for samples analyzed after an ICS with analytes that are outside these limits should be flagged "J" as estimated

9. **Spiked Sample Analysis.** Were percent recoveries outside acceptance criteria in either the MS/MSD? **(Y)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples

Lot 3E06106 Prep Batch 3128114	Aluminum Antimony Calcium Iron Magnesium Manganese	75-125 75-125 75-125 75-125 75-125 75-125	NC/MSB, NC/MSB 44,42 184, 50 NC/MSB, NC/MSB 150,99 504,252	None

Action: If the MS %R is <30%, results > the MDL are qualified as "J" and non-detects as "R. If the MS %R is 30-74%, results > the MDL are qualified as "J" and non-detects as "UJ. If the MS %R is >125%, results > the MDL are qualified as "J" and non-detects should not be qualified. If the MS/MSD is from a project sample apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

10. **Serial Dilution %D:** Were the calculated % D values within the acceptance criteria (10%) for all target analytes greater than **50X** the MDL? **The serial dilution was performed on a different client's sample from the same QC batch.**

F. GENERAL CHEMISTRY

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)** *(if NO, list non-compliant samples)*

Non Compliant Samples

Sample ID	Target Analyte	Holding Time Required	Holding Time Achieved	Action Required

Action: If aqueous CN sample pH <14, positive results are estimated "J" and non-detects qualified "R". If held > 14days, positive results are qualified "J", and non-detects are qualified "R".

2. **Initial Calibration Verification (ICV) Procedures.** Were ICV Procedures met? **No initial calibration verification procedures taken.**

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the ICV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the ICV %R falls in the range 75-80% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the ICV %R is >125% results above the MDL are qualified as estimated "J". If the ICV %R is > 150% all results are rejected "R".

3. **Continuing Calibration Verification Procedures.** Were CCV Procedures met? **No continuing calibration verification procedures taken.**

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the CCV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the CCV %R falls in the range 75-80% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the CCV %R is >125% results above the MDL are qualified as estimated "J", and non-detects are qualified "R". If the CCV %R is > 150% all results above the MDL are rejected "R".

4. **Blank Sample Analysis (Equipment, Field, Method).** Were target Metals identified in any Blank? **(N)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank Prep Batch 3132173 Prep Batch 3128098	None			

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 5 times (5X) the amount in any blank for the target analytes.

NOTE : Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

5. **Laboratory Control Samples (LCS).** Were percent recoveries outside acceptance criteria in either the LCS or LCSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)* (Serves to monitor the overall performance of the analysis, including the sample preparation. All LCS %R must fall within the control limits of 80-120%.)

LCS ID	Target Analyte	%R	Associated Project Samples	Action

Action: If the %R is 50-79%, qualify results ³MDL as "J" and non-detects as "UJ". If the %R is >120%, qualify results ³MDL as "J" and non-detects should not be qualified. If the %R is <50%, qualify results ³MDL as "J" and non-detects as "R". If the %R is >150%, qualify all results as "R".

6. **Matrix Spike Samples:** Were percent recoveries outside acceptance criteria in either the MS or MSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*Evaluates the effect of the sample matrix on the accuracy of the analyte analysis.

MS/MSD ID	Target Analyte	%R	Associated Project Samples	Action

Action: If the MS %R is <30%, results > the MDL are qualified as "J" and non-detects as "UJ. If the MS %R is 30-74%, results > the MDL are qualified as "J" and non-detects as "UJ. If the MS %R is >125% results, > the MDL are qualified as "J" and non-detects should not be qualified. If the MS/MSD is from a project sample apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

7. **Sample Duplicate:** Were the calculated % RPD values within the acceptance criteria (20%) for all target analytes greater than **5X** the MDL? **(Y)** *(if NO, list target analyte, RPD and affected samples)*

Sample ID	Target Analyte	RPD	Associated Samples	Recommendation
				Qualify results greater than the MDL as estimated "J", and non-detects as estimated "UJ".

Action: Analytes with RPDs greater than 20% for values greater than 5X the RL should be qualified "J" and non-detects "UJ".

49017-026 - SDG#: 3E07158

A. SAMPLE RECIEPT/ CHAIN OF CUSTODY

1. Samples were collected on May 6, 2003 and received at the laboratory on May 7, 2003.
Sample coolers were received at temperatures of 3.9°C and 4.1°C, with wet ice present.

Parameter	Analytical Method	Holding Time Criteria
Cyanide, Total	SW846 9012A	14 Days
Mercury in Solid Waste (Manual Cold-Vapor)	SW846 7471A	28 Days
Semi-volatile Organic Compounds by GC/MS	SW846 8270C	7 Days Ext./40 Days Post Ext.
Total Residue as Percent Solids	MCAWW 160.3 MOD	7 Days
Trace Inductively Coupled Plasma Metals	SW846 6010B	6 Months
Volatile Organic Compounds by GC/MS	SW846 8260B	14 Days

List all project samples in table below. *Identify field QC samples and potential problem samples.*

Lab ID	Sample ID	Matrix	Comments
A3E070158	**4267A-050603-1230**	S	
	4267B-0506003-1245	S	
	4267C-050603-1250	S	
	4266A-050603-1315	S	
	4266B-050603-1320	S	
	4266B-050603-FD	S	Field Duplicate (4266B-050803-1320)
	4266C-050603-1335	S	
	4263A-050603-1520	S	
	4263B-050603-1525	S	
	4263C-050603-1535	S	
A3E070257	**4262A-050603-1550**	S	
	4262B-050603-1600	S	
	4262C-050603-1610	S	
	42611A-050603-1625	S	
	42611B-050603-1635	S	
	42611C-050603-1645	S	
	4261A-050603-1705	S	
	4261B-050603-FD	S	Field Duplicate (4261A-050803-1730)
	4261B-050603-1730	S	
	4261C-050603-1740	S	

2. Case Narrative Issues & Miscellaneous Comments.
VOCs- Surrogate recoveries were outside criteria for samples 4267A-050603-1230, 4266C-0506-1335, 4262A-050603-1550 and 4261A-050603-1705 (Should be 4262C-050603-1610). Due to insufficient sample volume, re-preparation and reanalysis could not occur.

SVOCs- Batch 3127486 contained more than one type of analyte lists. A separate batch 3127515 had to be created due to reporting limitations and is associated with the original batch.
Sample 4263C-050603-1535 had internal standard areas outside acceptance limits due to matrix effects.

Metals – Serial dilution of a sample in this lot indicates that physical and chemical interferences were present. Refer to the sample report pages for the affected analytes flagged with "E".
Some reporting limits are lower than our standard reporting limits (SRL) but are supported by the laboratory's MDL and/or IDLs; however, there are no standards in the calibration curve low enough to support these value(s). The continuing calibration blanks and method blanks may not support the lower RL.

B. VOCs (EPA Method 8260B)

Sample ID.	Inst.	Date	Time	Comments
4267A-050603-1230	12	5/13	20:57	
4267B-0506003-1245	12	5/13	21:20	
4267C-050603-1250	12	5/13	21:42	
4266A-050603-1315	12	5/13	22:04	
4266B-050603-1320	12	5/13	22:27	
4266B-050603-FD	12	5/13	22:49	FD
4266C-050603-1335	12	5/13	23:12	
4263A-050603-1520	12	5/13	23:34	
4263B-050603-1525	12	5/13	23:57	
4263C-050603-1535	12	5/14	00:20	
4262A-050603-1550	12	5/14	00:42	
4262B-050603-1600	12	5/14	01:04	
4262C-050603-1610	12	5/14	01:27	
42611A-050603-1625	12	5/14	01:49	
42611B-050603-1635	12	5/14	02:11	
42611C-050603-1645	12	5/14	02:34	
4261A-050603-1705	12	5/14	02:56	
4261B-050603-FD	12	5/14	03:19	FD
4261B-050603-1730	12	5/14	20:22	
4261C-050603-1740	12	5/14	20:44	

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)**

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: If holding times were not met, positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

2. **GC/MS Instrument Performance Check.** GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. **(Y)**

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: Refer to the Functional Guidelines for Organic Data Review, pages 10-11 for specific actions.

3. **Initial Calibration Procedures.** Were Initial Calibration Procedures met? **(N)**

Inst.	Date/ Time	Target Analyte, %RSD	Associated Samples	Corrective Action
8	4/28 08:021		Inst.8 not used	Qualify positive results as "J", estimated and

12	3/19 18:29	Acetone, 37.655	**4267A-050603-1230** **4267B-0506003-1245** **4267C-050603-1250** **4266A-050603-1315** **4266B-050603-1320** **4266B-050603-FD** **4266C-050603-1335** **4263A-050603-1520** **4263B-050603-1525** **4263C-050603-1535** **4262A-050603-1550** **4262B-050603-1600** **4262C-050603-1610** **42611A-050603-1625** **42611B-050603-1635** **42611C-050603-1645** **4261A-050603-1705** **4261B-050603-FD** **4261B-050603-1730** **4261C-050603-1740**	non-detected analytes as "UJ", estimated undetected.

4. **Continuing Calibration Procedures.** Were Continuing Calibration Procedures met? **(N)** *(if NO, list non-compliant instrument, target analytes and affected samples)*. (Percent Drift (%D) must be less than or equal to 25%)

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
12	5/13 16:03	2-Hexanone, 35.3 Acetone, 71.7	**4267A-050603-1230** **4267B-0506003-1245** **4267C-050603-1250** **4266A-050603-1315** **4266B-050603-1320** **4266B-050603-FD** **4266C-050603-1335** **4263A-050603-1520** **4263B-050603-1525** **4263C-050603-1535** **4262A-050603-1550** **4262B-050603-1600** **4262C-050603-1610** **42611A-050603-1625** **42611B-050603-1635** **42611C-050603-1645** **4261A-050603-1705** **4261B-050603-FD**	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
12	5/14 16:13	Acetone, -74.8 2-Butanone, 25.6 2-Hexanone, 33.3	**4261B-050603-1730** **4261C-050603-1740**	

5. **Blank Sample Analysis (Trip, Equipment, Field, Method).** Were target VOCs identified in any Blank? **(N)** *(if YES, list type of blank, target analyte concentration and affected samples.)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank, I-12 5/13/03, 20:35	None			

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the common laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane), or 5 times (5X) the amount for other target compounds.

NOTE :Trip blank associated samples include all samples shipped within the same sample cooler. Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

6. **System Monitoring Compounds Recoveries.** Were surrogate compound recoveries outside acceptance criteria specified by the laboratory? **(Y)**

Surrogate Percent Recovery Criteria			
Surrogate		**Aqueous Matrix**	**Solid Matrix**
Dibromofluoromethane	SRG01	73-112	59-138
1,2-Dichloroethane-d4	SRG02	61-128	61-130
Toluene-d8	SRG03	76-110	60-143
4-Bromofluorobenzene	SRG04	74-116	47-158

Project Sample ID	SRG01 %R	SRG02 %R	SRG03 %R	SRG04 %R
4267A-050603-1230	58			
4266C-050603-1335	54			
4262A-050603-1550	57			
4262C-050603-1610	53			

Action: If the surrogate percent recovery is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the surrogate percent recovery is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "UJ". If the surrogate percent recovery is less than 10% associated target analyte positive results are qualified "J" and non-detects are qualified "R".

7. **Laboratory Control Samples (LCS), Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries.** Were percent recoveries outside acceptance criteria in either the LCS/LCSD or MS/MSD? **(N)**

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
		[Insert %R Range]		
		[Insert %R Range]		

Action: If the LCS %R is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the LCS %R is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "R". If the MS/MSD is from a project sample use the same rules as the LCS/LCSD and apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

8. **Internal Standard Recoveries.** Did the calculated response of each IS compound fall within the QA/QC criteria of +100% and –50% of the corresponding CCV standard? **(Y)**

Project Sample ID	Non-Compliant IS	% Recovery	Analytes Affected

Action: If the internal standard is greater than the upper limit, positive results for the associated target analytes are qualified "J" and non-detects should not be qualified. If the internal standard is less than the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "UJ". If the internal standard is less than 10% of the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "R".

C. SVOCs (EPA Method 8270C)

Sample ID.	Inst.	Date Extracted	Date Analyzed	Time	Comments
4267A-050603-1230	9	5/7	5/11	04:35	
4267B-0506003-1245	9	5/7	5/11	01:41	
4267C-050603-1250	9	5/7	5/11	01:12	
4266A-050603-1315	9	5/7	5/11	03:37	
4266B-050603-1320	9	5/7	5/11	00:43	
4266B-050603-FD	9	5/7	5/10	23:44	
4266C-050603-1335	9	5/7	5/11	00:14	
4263A-050603-1520	9	5/7	5/11	04:06	
4263B-050603-1525	9	5/7	5/10	22:46	
4263C-050603-1535	9	5/7	5/10	23:16	
4262A-050603-1550	8	5/7	5/12	14:49	
4262B-050603-1600	8	5/7	5/12	15:19	
4262C-050603-1610	8	5/7	5/12	15:48	
42611A-050603-1625	8	5/7	5/12	16:18	
42611B-050603-1635	8	5/7	5/12	16:47	
42611C-050603-1645	8	5/7	5/12	17:17	
4261A-050603-1705	8	5/7	5/13	21:19	
4261B-050603-FD	8	5/7	5/12	18:45	
4261B-050603-1730	8	5/7	5/12	18:15	
4261C-050603-1740	8	5/7	5/12	17:46	

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)**

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: If holding times were not met, positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

2. **GC/MS Instrument Performance Check.** GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. **(Y)** *(if NO, list non compliant instrument/affected samples)*

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: Refer to the Functional Guidelines for Organic Data Review, pages 49-50 for specific actions.

3. **Initial Calibration Procedures.** Were Initial Calibration Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (Percent Relative Standard Deviation (%RSD) must be less than or equal to 30%)

Inst.	Date/ Time	Target Analyte, %RSD	Associated Samples	Corrective Action
8	5/5 13:20	None		Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
9	5/3 17:36	None		

4. Continuing Calibration Procedures. Were Continuing Calibration Procedures met? **(N)** *(if NO, list non-compliant instrument, target analytes and affected samples)*. (Percent Drift (%D) must be less than or equal to 25%)

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
8	5/12 11:51	None		Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
8	5/13 09:36	None		
9	5/10 19:23	2,4-Dinitrophenol, 28.6 bis(2-ethylhexyl) Phthalate, 27.6	**4267A-050603-1230** **4267B-0506003-1245** **4267C-050603-1250** **4266A-050603-1315** **4266B-050603-1320** **4266B-050603-FD** **4266C-050603-1335** **4263A-050603-1520** **4263B-050603-1525** **4263C-050603-1535**	

5. Blank Sample Analysis (Trip, Equipment, Field, Method). Were target SVOCs identified in any Blank? **(N)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank, I-9 5/10/03, 21:19	None			
Method Blank, I-8 5/12/03, 13:51	None			

<u>Action:</u> In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the common laboratory contaminants (phthalate esters), or 5 times (5X) the amount for other target compounds.

6. System Monitoring Compounds Recoveries. Were surrogate compound recoveries outside acceptance criteria specified by the laboratory? **(Y)** *(if YES, indicate surrogate recovery criteria, project sample ID and %R)*

Surrogate Percent Recovery Criteria			
Surrogate		**Aqueous Matrix**	**Solid Matrix**
Nitrobenzene-d5	SRG01		42-110
2-Fluorobiphenyl	SRG02		43-110
Terphenyl-d14	SRG03		37-137
Phenol-d5	SRG04		25-115
2-Fluorophenol	SRG05		11-116
2,4,6-Tribromophenol	SRG06		35-116

Project Sample ID	SRG01 %R	SRG02 %R	SRG03 %R	SRG04 %R	SRG05 %R	SRG06 %R

<u>Action:</u> If the surrogate percent recovery is greater than the upper acceptance limit associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the surrogate percent recovery is less than the lower acceptance limit

associated target analyte positive results are qualified "J" and non-detects are qualified "UJ". If the surrogate percent recovery is less than 10% associated target analyte positive results are qualified "J" and non-detects are qualified "R".

7. **Laboratory Control Samples (LCS), Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries.** Were percent recoveries outside acceptance criteria in either the LCS/LCSD or MS/MSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
		[Insert %R Range]		
		[Insert %R Range]		

Action: If the LCS %R is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the LCS %R is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "R". If the MS/MSD is from a project sample use the same rules as the LCS/LCSD and apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

8. **Internal Standard Recoveries.** Did the calculated response of each IS compound fall within the QA/QC criteria of +100% and –50% of the corresponding CCV standard? **(N)** *(if NO, indicate project sample, non-compliant IS, %R, analytes affected-obtain from laboratory SOP)*

Project Sample ID	Non-Compliant IS	% Recovery	Analytes Affected
4263C-050603-1535	IS4 Phenanthrene-d10 (219976-879904)	985088	4,6-Dinitro-2-methylphenol, N-Nitrosodiphenylamine, 4-Bromophenyl phenyl ether, Hexachlorobenzene, Pentachlorophenol, Phenanthrene, Anthracene, Carbazole, Di-n-butylphthalate, Fluoranthene

Action: If the internal standard is greater than the upper limit, positive results for the associated target analytes are qualified "J" and non-detects should not be qualified. If the internal standard is less than the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "UJ". If the internal standard is less than 10% of the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "R".

E. METALS (SW846 6010B, ICP-AES)

Sample ID.	Prep Batch	Date	Time	Comments
4267A-050603-1230	3128116	5/8	15:06	
4267B-0506003-1245	3128116	5/8	15:10	
4267C-050603-1250	3128116	5/8	15:11	
4266A-050603-1315	3128116	5/8	15:15	
4266B-050603-1320	3128116	5/8	15:16	
4266B-050603-FD	3128116	5/8	15:17	
4266C-050603-1335	3128116	5/8	15:18	
4263A-050603-1520	3128116	5/8	15:19	
4263B-050603-1525	3128116	5/8	15:21	
4263C-050603-1535	3128116	5/8	15:22	
4262A-050603-1550	3128116	5/8	15:23	
4262B-050603-1600	3128116	5/8	15:24	
4262C-050603-1610	3128116	5/8	15:25	
42611A-050603-1625	3128116	5/8	15:30	
42611B-050603-1635	3128116	5/8	15:31	

42611C-050603-1645	3128116	5/8	15:32	
4261A-050603-1705	3128116	5/8	15:45	
4261B-050603-FD	3128116	5/8	15:34	
4261B-050603-1730	3128116	5/8	15:36	
4261C-050603-1740	3128116	5/8	15:37	

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)** *(if NO, list non-compliant samples)*

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: If aqueous sample pH ³2, positive results are qualified "J", estimated and non-detected analytes as "R", rejected. If held > 180 days, positive results are qualified "J", estimated and non-detected analytes as "R", rejected

2. **Initial Calibration Verification (ICV) Procedures.** Were ICV Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples)*. (*Must be calibrated once every 24 hours. Acceptance criteria 70-130 %R for Antimony, Lead, and Thallium, 80-120 %R for Mercury and 90-110% R for all other metals*).

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the ICV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the ICV %R falls in the range 75-89% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the ICV %R falls in the range 111-125% results above the MDL are qualified as estimated "J", and non-detects should not be qualified. If the ICV %R is >125% results above the MDL are qualified as estimated "J", and non-detects are qualified "R". If the ICV %R is > 160% all results above the MDL are rejected "R".

3. **Continuing Calibration Verification Procedures.** Were CCV Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples)*. (*Must be calibrated every 2 hours. Acceptance criteria 70-130 %R for Antimony, Lead, and Thallium, 80-120 %R for Mercury, and 90-110% recovery for all other metals*).

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the ICV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the CCV %R falls in the range 75-89% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the CCV %R falls in the range 111-125% results above the MDL are qualified as estimated "J", and non-detects should not be qualified. If the CCV %R is >125% results above the MDL are qualified as estimated "J", and non-detects are qualified "R". If the CCV %R is > 160% all results above the MDL limit are rejected "R".

4. **Blank Sample Analysis (Equipment, Field, Method).** Were target Metals identified in any Blank? **(Y)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank	Barium	0.21 mg/kg	**4267A-050603-1230**	2.1 mg/kg
Prep Batch 3128116	Calcium	32.8 mg/kg	**4267B-0506003-1245**	328.0 mg/kg
	Chromium	0.17 mg/kg	**4267C-050603-1250**	1.7 mg/kg
	Copper	0.18 mg/kg	**4266A-050603-1315**	1.8 mg/kg
	Iron	5.4 mg/kg	**4266B-050603-1320**	54.0 mg/kg

	Magnesium Manganese Potassium	8.4 mg/kg 0.086 mg/kg 28.5 mg/kg	**4266B-050603-FD** **4266C-050603-1335** **4263A-050603-1520** **4263B-050603-1525** **4263C-050603-1535** **4262A-050603-1550** **4262B-050603-1600** **4262C-050603-1610** **42611A-050603-1625** **42611B-050603-1635** **42611C-050603-1645** **4261A-050603-1705** **4261B-050603-FD** **4261B-050603-1730** **4261C-050603-1740**	84.0 mg/kg 0.860 mg/kg 285.0 mg/kg

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the target analytes.

NOTE : Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

5. **Laboratory Control Samples (LCS). .**Were percent recoveries outside acceptance criteria in either the LCS or LCSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

(Serves to monitor the overall performance of each step during the analysis, including the sample preparation. All aqueous LCS %R's must fall within the control limits of 80-120%, except for Antimony and Silver which have no fixed control limits.)

LCS ID	Target Analyte	%R	Associated Project Samples	Action

Action: For an aqueous LCS if the %R is 50-79%, qualify results ³MDL as "J" and non-detects as "UJ". If the %R is >120%, qualify results ³MDL as "J" and non-detects should not be qualified. If the %R is <50%, qualify results ³MDL as "J" and non-detects as "R". If the %R is >150%, qualify all results as "R". For the soil LCS, if the %R is > the upper limit qualify results ³MDL as "J" and non-detects should not be qualified. If the %R is < the lower limit qualify results ³MDL as "J" and non-detects as "UJ".

6. **Duplicate Sample Analysis.** Were the calculated % RPD values within the acceptance criteria (20%) for all target analytes greater than **5X** the MDL? **(Y)** *(if NO, list target analyte, RPD and affected samples)*

RPDs for Field Duplicates

Sample ID	Target Analyte	RPD	Associated Samples	Recommendation
4266B-050603-FD 4266B-050603-1320	Calcium	112.9	**4267A-050603-1230** **4267B-0506003-1245** **4267C-050603-1250** **4266A-050603-1315** **4266B-050603-1320** **4266B-050603-FD** **4266C-050603-1335** **4263A-050603-1520** **4263B-050603-1525** **4263C-050603-1535**	Qualify results greater than the MDL as estimated "J", and non-detects as estimated "UJ".

Action: Analytes with RPDs greater than 20% should be qualified "J" and non-detects qualified "UJ".

7. **Contract Required Detection Limit (CRDL) Standard:** Were target anlayte reporting limits (RL) below the CRDL? **(Y)** *(if NO, list target analyte, RL, CRDL and indicate reason why the RL was > the CRDL, e.g. dilution for high target compound detection)*

Sample ID	Target Analyte	RL	CRDL	Reason why the RL was > the CRDL

8. **Interference Check Standard (ICS):** Were all ICS recoveries +/- 20% of the true value? **(Y)** (if NO, list ICS, target analyte(s), %R and affected samples)

ICS ID	Target Analyte	%R	Affected Samples

Action: Reported Results above the RL for samples analyzed after an ICS with analytes that are outside these limits should be flagged "J" as estimated

9. **Spiked Sample Analysis.** Were percent recoveries outside acceptance criteria in either the MS/MSD? **(Y)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
Lot A3E070158	Aluminum	75-125	NC/MSB, NC/MSB	None
Prep Batch 3128116	Antimony	75-125	57,69	
	Calcium	75-125	NC/MSB, NC/MSB	
	Iron	75-125	NC/MSB, NC/MSB	
	Manganese	75-125	NC/MSB, NC/MSB	
	Zinc	75-125	161,72	

Action: If the MS %R is <30%, results > the MDL are qualified as "J" and non-detects as "R. If the MS %R is 30-74%, results > the MDL are qualified as "J" and non-detects as "UJ. If the MS %R is >125%, results > the MDL are qualified as "J" and non-detects should not be qualified. If the MS/MSD is from a project sample apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

10. **Serial Dilution %D:** Were the calculated % D values within the acceptance criteria (10%) for all target analytes greater than **50X** the MDL? **(N)** *(if NO, list target analyte, %D and affected samples)*

Sample ID	Target Analyte	Serial Dilution (% D)	Associated Samples	Recommendation
4261C-050603-1740L	Beryllium	31.7	**4267A-050603-1230** **4267B-0506003-1245** **4267C-050603-1250** **4266A-050603-1315** **4266B-050603-1320** **4266B-050603-FD** **4266C-050603-1335** **4263A-050603-1520** **4263B-050603-1525** **4263C-050603-1535** **4262A-050603-1550** **4262B-050603-1600** **4262C-050603-1610** **42611A-050603-1625** **42611B-050603-1635** **42611C-050603-1645** **4261A-050603-1705** **4261B-050603-FD** **4261B-050603-1730** **4261C-050603-1740**	Qualify results greater than the MDL as estimated "J", and non-detects as estimated "UJ".

Action: For serial dilution %D results >10%, qualify results > the MDL as "J" and non-detects as "UJ".

F. GENERAL CHEMISTRY

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)** *(if NO, list non-compliant samples)*

Non Compliant Samples

Sample ID	Target Analyte	Holding Time Required	Holding Time Achieved	Action Required

Action: If aqueous CN sample pH <14, positive results are estimated "J" and non-detects qualified "R". If held > 14days, positive results are qualified "J", and non-detects are qualified "R".

2. **Initial Calibration Verification (ICV) Procedures.** Were ICV Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples)*. (*Must be calibrated once every 24 hours. Acceptance criteria 70-130 %R for Antimony, Lead, and Thallium, 80-120 %R for Mercury and 90-110% R for all other metals*).

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the ICV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the ICV %R falls in the range 75-80% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the ICV %R is >125% results above the MDL are qualified as estimated "J". If the ICV %R is > 150% all results are rejected "R".

3. **Continuing Calibration Verification Procedures.** Were CCV Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples)*. (*Must be calibrated every 2 hours. Acceptance criteria 70-130 %R for Antimony, Lead, and Thallium, 80-120 %R for Mercury, and 90-110% recovery for all other metals*).

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the CCV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the CCV %R falls in the range 75-80% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the CCV %R is >125% results above the MDL are qualified as estimated "J", and non-detects are qualified "R". If the CCV %R is > 150% all results above the MDL are rejected "R".

4. **Blank Sample Analysis (Equipment, Field, Method).** Were target Metals identified in any Blank? **(N)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
	None			

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 5 times (5X) the amount in any blank for the target analytes.

NOTE : Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

5. **Laboratory Control Samples (LCS).** Were percent recoveries outside acceptance criteria in either the LCS or LCSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)* (Serves to monitor the overall performance of the analysis, including the sample preparation. All LCS %R must fall within the control limits of 80-120%.)

LCS ID	Target Analyte	%R	Associated Project Samples	Action

Action: If the %R is 50-79%, qualify results ³MDL as "J" and non-detects as "UJ". If the %R is >120%, qualify results ³MDL as "J" and non-detects should not be qualified. If the %R is <50%, qualify results ³MDL as "J" and non-detects as "R". If the %R is >150%, qualify all results as "R".

6. **Matrix Spike Samples:** Were percent recoveries outside acceptance criteria in either the MS or MSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*Evaluates the effect of the sample matrix on the accuracy of the analyte analysis.

MS/MSD ID	Target Analyte	%R	Associated Project Samples	Action

Action: If the MS %R is <30%, results > the MDL are qualified as "J" and non-detects as "UJ. If the MS %R is 30-74%, results > the MDL are qualified as "J" and non-detects as "UJ. If the MS %R is >125% results, > the MDL are qualified as "J" and non-detects should not be qualified. If the MS/MSD is from a project sample apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

7. **Sample Duplicate:** Were the calculated % RPD values within the acceptance criteria (20%) for all target analytes greater than **5X** the MDL? **(Y)** *(if NO, list target analyte, RPD and affected samples)*

Sample ID	Target Analyte	RPD	Associated Samples	Recommendation
				Qualify results greater than the MDL as estimated "J", and non-detects as estimated "UJ".

Action: Analytes with RPDs greater than 20% for values greater than 5X the RL should be qualified "J" and non-detects "UJ".

49017-026 - SDG#: 3E08200

A. SAMPLE RECIEPT/ CHAIN OF CUSTODY

1. Samples were collected on May 7 and 8, 2003 and received at the laboratory on May 8 and 9, 2003.
Sample coolers were received at temperatures of 1.2, 1.7 and 1.7°C, with wet ice present.

Parameter	Analytical Method	Holding Time Criteria
Cyanide, Total	SW846 9012A	14 Days
Mercury in Solid Waste (Manual Cold-Vapor)	SW846 7471A	28 Days
Semi-volatile Organic Compounds by GC/MS	SW846 8270C	7 Days Ext./40 Days Post Ext.
Total Residue as Percent Solids	MCAWW 160.3 MOD	7 Days
Trace Inductively Coupled Plasma Metals	SW846 6010B	6 Months
Volatile Organic Compounds by GC/MS	SW846 8260B	14 Days

List all project samples in table below. *Identify field QC samples and potential problem samples.*

Lab ID	Sample ID	Matrix	Comments
A3E080200	**42610A-050703-0805**	S	
	42610A-050703-TB	AQ	Trip Blank
	42610A-050703-FD	S	Field Duplicate (42610A-050703-0805)
	42610B-050703-0825	S	
	42610C-050703-MSMD	S	Matrix Spike/Matrix Spike Duplicate
	4264A-050703-0905	S	
	4264B-050703-0915	S	
	4264C-050703-MSMD	S	Matrix Spike/Matrix Spike Duplicate
	42610C-050703-0850	S	
	4264-050703-0955	S	
A3E080217	**4265A-050703-1020**	S	
	4265B-050703-1035	S	
	4265B-050703-FD	S	FD (4265B-050703-1035) – RPD for Ethylbenzene is 71.4
	4265C-050703-1055	S	
A3E090194	**G53-050803-0755**	S	
	G51-050803-0825	S	
	G52-050803-0835	S	
	G55A-050803-0920	S	
	G55B-050803-0925	S	
	G55C-050803-0930	S	

2. Case Narrative Issues & Miscellaneous Comments.
Received MS/MSD volume that was thought to go with a parent sample (for two separate samples), but were actually samples of their own. Unable to recreate encores for samples 4261C-050706-MSMD, 42610C-050703-0850 and 4264C-050703-0955.

Metals – Serial dilution of a sample in this lot indicates that physical and chemical interferences were present. Refer to the sample report pages for the affected analytes flagged with "E".
Some reporting limits are lower than our standard reporting limits (SRL) but are supported by the laboratory's MDL and/or IDLs; however, there are no standards in the calibration curve low enough to support these value(s). The continuing calibration blanks and method blanks may not support the lower RL.

B. VOCs (EPA Method 8260B)

Sample ID.	Inst.	Date	Time	Comments
42610A-050703-0805	12	5/14	21:07	
42610A-050703-TB	11	5/16	18:22	TB – Acetone 1.8 ppb, 2-Butanone 0.63 ppb
42610A-050703-FD	12	5/14	21:29	FD
42610B-050703-0825	12	5/14	21:52	
42610C-050703-0850	12	5/16	06:49	MS/MSD
4264A-050703-0905	12	5/14	22:14	
4264B-050703-0915	12	5/14	22:37	
4264C-050703-MSMD	12	5/14	23:00	MS/MSD
4265A-050703-1020	12	5/16	07:57	
4265B-050703-1035	12	5/15	00:30	
4265B-050703-FD	12	5/15	00:53	FD
4265C-050703-1055	12	5/15	01:16	

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)**

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: If holding times were not met, positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

2. **GC/MS Instrument Performance Check.** GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. **(Y)**

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: Refer to the Functional Guidelines for Organic Data Review, pages 10-11 for specific actions.

3. **Initial Calibration Procedures.** Were Initial Calibration Procedures met? **(N)**

Inst.	Date/ Time	Target Analyte, %RSD	Associated Samples	Corrective Action
11	5/14 16:43	None		Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
12	3/19 18:29	Acetone, 37.655	**42610A-050703-0805** **42610A-050703-FD** **42610B-050703-0825** **42610C-050703-0850** **4264A-050703-0905** **4264B-050703-0915** **4264C-050703-MSMD** **4265A-050703-1020** **4265B-050703-1035** **4265B-050703-FD** **4265C-050703-1055**	

4. **Continuing Calibration Procedures.** Were Continuing Calibration Procedures met? **(N)** *(if NO, list non-compliant instrument, target analytes and affected samples)*. (Percent Drift (%D) must be less than or equal to 25%)

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
11	5/16 09:57	Acetone, -39.3 2-Hexanone, 32.7	**42610A-050703-TB**	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
12	5/13 16:03	2-Hexanone, 35.3 Acetone, 71.1	**None**	
12	5/14 16:13	Acetone, -74.8 2-Butanone, 25.6 2-Hexanone, 33.3	**42610A-050703-0805** **42610A-050703-FD** **42610B-050703-0825** **4264A-050703-0905** **4264B-050703-0915** **4264C-050703-MSMD**	
12	5/15 20:38	None		

5. **Blank Sample Analysis (Trip, Equipment, Field, Method).** Were target VOCs identified in any Blank? **(N)** *(if YES, list type of blank, target analyte concentration and affected samples.)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank, I-11 5/16/03, 11:06	None			
Method Blank, I-12 5/13/03, 20:35	None			

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the common laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane), or 5 times (5X) the amount for other target compounds.

NOTE :Trip blank associated samples include all samples shipped within the same sample cooler. Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

6. **System Monitoring Compounds Recoveries.** Were surrogate compound recoveries outside acceptance criteria specified by the laboratory? **(N)**

Surrogate Percent Recovery Criteria			
Surrogate		**Aqueous Matrix**	**Solid Matrix**
Dibromofluoromethane	SRG01	73-112	59-138
1,2-Dichloroethane-d4	SRG02	61-128	61-130
Toluene-d8	SRG03	76-110	60-143
4-Bromofluorobenzene	SRG04	74-116	47-158

Project Sample ID	SRG01 %R	SRG02 %R	SRG03 %R	SRG04 %R

Action: If the surrogate percent recovery is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the surrogate percent recovery is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "UJ". If the surrogate percent recovery is less than 10% associated target analyte positive results are qualified "J" and non-detects are qualified "R".

7. **Laboratory Control Samples (LCS), Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries.** Were percent recoveries outside acceptance criteria in either the LCS/LCSD or MS/MSD? **(N)**

Project Sample ID	Target Analyte	%RPD Criteria	%RPD	Affected Samples
42610C-050703-MSMD	Benzene	0-20	32	?

Action: If the LCS %R is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the LCS %R is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "R". If the MS/MSD is from a project sample use the same rules as the LCS/LCSD and apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

8. **Internal Standard Recoveries.** Did the calculated response of each IS compound fall within the QA/QC criteria of +100% and –50% of the corresponding CCV standard? **(Y)**

Project Sample ID	Non-Compliant IS	% Recovery	Analytes Affected

Action: If the internal standard is greater than the upper limit, positive results for the associated target analytes are qualified "J" and non-detects should not be qualified. If the internal standard is less than the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "UJ". If the internal standard is less than 10% of the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "R".

9. **Duplicate Sample Analysis.** Were the calculated % RPD values within the acceptance criteria (50%) for all target analytes greater than **5X** the RL? **(N)** *(if NO, list target analyte, RPD and affected samples)*

RPDs for Field Duplicates

Sample ID	Target Analyte	RPD	Associated Samples	Recommendation
4265B-050703-FD 4265B-050703-1035	Ethylbenzene	71.4	**4265A-050703-1020** **4265C-050703-1055**	Report average value for both samples

C. SVOCs (EPA Method 8270C)

Sample ID.	Inst.	Date Extracted	Date Analyzed	Time	Comments
42610A-050703-0805	8	5/8	5/14	17:04	
42610A-050703-FD	8	5/8	5/14	17:33	FD
42610B-050703-0825	8	5/8	5/14	18:02	
42610C-050703-MSMD	8	5/8	5/14	18:31	MS/MSD
4264A-050703-0905	8	5/8	5/14	19:58	
4264B-050703-0915	8	5/8	5/15	19:27	
4264C-050703-MSMD	8	5/8	5/15	19:56	MS/MSD
42610C-050703-0850	8	5/13	5/15	18:30	
4264-050703-0955	8	5/13	5/15	18:59	
4265A-050703-1020	8	5/8	5/15	21:23	
4265B-050703-1035	8	5/8	5/15	21:52	
4265B-050703-FD	8	5/8	5/15	22:21	FD
4265C-050703-1055	8	5/8	5/15	22:51	
G55A-050803-0920	7	5/9	5/15	20:20	
G55B-050803-0925	7	5/9	5/15	19:51	
G55C-050803-0930	7	5/9	5/15	18:24	

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)**

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: If holding times were not met, positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

2. **GC/MS Instrument Performance Check.** GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. **(Y)** *(if NO, list non compliant instrument/affected samples)*

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: Refer to the Functional Guidelines for Organic Data Review, pages 49-50 for specific actions.

3. **Initial Calibration Procedures.** Were Initial Calibration Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (Percent Relative Standard Deviation (%RSD) must be less than or equal to 30%)

Inst.	Date/ Time	Target Analyte, %RSD	Associated Samples	Corrective Action
7	5/13 09:53	None		Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
8	5/5 13:20	None		

4. **Continuing Calibration Procedures.** Were Continuing Calibration Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (Percent Drift (%D) must be less than or equal to 25%)

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
7	5/14 12:09	None		Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
7	5/15 10:09	None		
8	5/14 09:22	None		
8	5/15 11:41	None		

5. **Blank Sample Analysis (Trip, Equipment, Field, Method).** Were target SVOCs identified in any Blank? **(N)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank, I-8 5/14/03, 11:17	None			
Method Blank, I-7 5/14/03, 15:33	None			
Method Blank, I-8	None			

5/15/03, 17:03				

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the common laboratory contaminants (phthalate esters), or 5 times (5X) the amount for other target compounds.

6. **System Monitoring Compounds Recoveries.** Were surrogate compound recoveries outside acceptance criteria specified by the laboratory? **(N)** *(if YES, indicate surrogate recovery criteria, project sample ID and %R)*

Surrogate Percent Recovery Criteria			
Surrogate		**Aqueous Matrix**	**Solid Matrix**
Nitrobenzene-d5	SRG01		42-110
2-Fluorobiphenyl	SRG02		43-110
Terphenyl-d14	SRG03		37-137
Phenol-d5	SRG04		25-115
2-Fluorophenol	SRG05		11-116
2,4,6-Tribromophenol	SRG06		35-116

Project Sample ID	SRG01 %R	SRG02 %R	SRG03 %R	SRG04 %R	SRG05 %R	SRG06 %R

Action: If the surrogate percent recovery is greater than the upper acceptance limit associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the surrogate percent recovery is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "UJ". If the surrogate percent recovery is less than 10% associated target analyte positive results are qualified "J" and non-detects are qualified "R".

7. **Laboratory Control Samples (LCS), Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries.** Were percent recoveries outside acceptance criteria in either the LCS/LCSD or MS/MSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
		[Insert %R Range]		
		[Insert %R Range]		

Action: If the LCS %R is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the LCS %R is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "R". If the MS/MSD is from a project sample use the same rules as the LCS/LCSD and apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

8. **Internal Standard Recoveries.** Did the calculated response of each IS compound fall within the QA/QC criteria of +100% and –50% of the corresponding CCV standard? **(Y)** *(if NO, indicate project sample, non-compliant IS, %R, analytes affected-obtain from laboratory SOP)*

Project Sample ID	Non-Compliant IS	% Recovery	Analytes Affected

Action: If the internal standard is greater than the upper limit, positive results for the associated target analytes are qualified "J" and non-detects should not be qualified. If the internal standard is less than the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "UJ". If the internal standard is less than 10% of the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "R".

E. METALS (SW846 6010B, ICP-AES)

Sample ID.	Prep Batch	Date	Time	Comments
42610A-050703-0805	3134101	5/14	13:50	
42610A-050703-FD	3134101	5/14	13:54	FD
42610B-050703-0825	3134101	5/14	13:55	
42610C-050703-MSMD	3134101	5/14	13:56	
4264A-050703-0905	3134101	5/14	14:00	
4264B-050703-0915	3134101	5/14	14:01	
4264C-050703-MSMD	3134101	5/14	14:02	
42610C-050703-0850	3134101	5/14	14:08	
4264-050703-0955	3134101	5/14	14:09	
4265A-050703-1020	3134101	5/14	14:10	
4265B-050703-1035	3134101	5/14	14:11	
4265B-050703-FD	3134101	5/14	14:13	FD
4265C-050703-1055	3134101	5/14	14:14	
G53-050803-0755	3134101	5/14	14:15	
G51-050803-0825	3134101	5/14	14:16	
G52-050803-0835	3134101	5/14	14:17	

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)** *(if NO, list non-compliant samples)*

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: If aqueous sample pH ³2, positive results are qualified "J", estimated and non-detected analytes as "R", rejected. If held > 180 days, positive results are qualified "J", estimated and non-detected analytes as "R", rejected

2. **Initial Calibration Verification (ICV) Procedures.** Were ICV Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples)*. (*Must be calibrated once every 24 hours. Acceptance criteria 70-130 %R for Antimony, Lead, and Thallium, 80-120 %R for Mercury and 90-110% R for all other metals*).

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the ICV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the ICV %R falls in the range 75-89% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the ICV %R falls in the range 111-125% results above the MDL are qualified as estimated "J", and non-detects should not be qualified. If the ICV %R is >125% results above the MDL are qualified as estimated "J", and non-detects are qualified "R". If the ICV %R is > 160% all results above the MDL are rejected "R".

3. **Continuing Calibration Verification Procedures.** Were CCV Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples)*. (*Must be calibrated every 2 hours. Acceptance criteria 70-130 %R for Antimony, Lead, and Thallium, 80-120 %R for Mercury, and 90-110% recovery for all other metals*).

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the ICV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the CCV %R falls in the range 75-89% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the CCV %R falls in the range 111-125% results above the MDL are qualified as estimated "J", and non-detects should not be

qualified. If the CCV %R is >125% results above the MDL are qualified as estimated "J", and non-detects are qualified "R". If the CCV %R is > 160% all results above the MDL limit are rejected "R".

4. **Blank Sample Analysis (Equipment, Field, Method).** Were target Metals identified in any Blank? **(Y)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank Prep Batch 3134101	Antimony Barium Calcium Iron Magnesium Manganese Potassium Zinc	0.32 mg/kg 0.16 mg/kg 34.6 mg/kg 9.5 mg/kg 8.7 mg/kg 0.14 mg/kg 25.3 mg/kg 1.5 mg/kg	**42610A-050703-0805** **42610A-050703-FD** **42610B-050703-0825** **42610C-050703-MSMD** **4264A-050703-0905** **4264B-050703-0915** **4264C-050703-MSMD** **42610C-050703-0850** **4264-050703-0955** **4265A-050703-1020** **4265B-050703-1035** **4265B-050703-FD** **4265C-050703-1055** **G53-050803-0755** **G51-050803-0825** **G52-050803-0835**	3.2 mg/kg 1.6 mg/kg 346.0 mg/kg 95.0 mg/kg 87.0 mg/kg 1.40 mg/kg 253.0 mg/kg 15.0 mg/kg

<u>Action:</u> In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the target analytes.

NOTE : Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

5. **Laboratory Control Samples (LCS).** Were percent recoveries outside acceptance criteria in either the LCS or LCSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

(Serves to monitor the overall performance of each step during the analysis, including the sample preparation. All aqueous LCS %R's must fall within the control limits of 80-120%, except for Antimony and Silver which have no fixed control limits.)

LCS ID	Target Analyte	%R	Associated Project Samples	Action

<u>Action:</u> For an aqueous LCS if the %R is 50-79%, qualify results ³MDL as "J" and non-detects as "UJ". If the %R is >120%, qualify results ³MDL as "J" and non-detects should not be qualified. If the %R is <50%, qualify results ³MDL as "J" and non-detects as "R". If the %R is >150%, qualify all results as "R". For the soil LCS, if the %R is > the upper limit qualify results ³MDL as "J" and non-detects should not be qualified. If the %R is < the lower limit qualify results ³MDL as "J" and non-detects as "UJ".

6. **Duplicate Sample Analysis.** Were the calculated % RPD values within the acceptance criteria (20%) for all target analytes greater than **<u>5X</u>** the MDL? **(N)** *(if NO, list target analyte, RPD and affected samples)*

RPDs for Field Duplicates

Sample ID	Target Analyte	RPD	Associated Samples	Recommendation
4265B-050703-FD 4265B-050703-1035	Aluminum Barium Calcium Sodium	65.5 75.7 52.5 70.8		Report average values

42610A-050703-0805 42610A-050703-FD	Cobalt	59.7		

Action: Analytes with RPDs greater than 20% should be qualified "J" and non-detects qualified "UJ".

7. **Contract Required Detection Limit (CRDL) Standard:** Were target anlayte reporting limits (RL) below the CRDL? **(Y)** *(if NO, list target analyte, RL, CRDL and indicate reason why the RL was > the CRDL, e.g. dilution for high target compound detection)*

Sample ID	Target Analyte	RL	CRDL	Reason why the RL was > the CRDL

8. **Interference Check Standard (ICS):** Were all ICS recoveries +/- 20% of the true value? **(Y)** (if NO, list ICS, target analyte(s), %R and affected samples)

ICS ID	Target Analyte	%R	Affected Samples

Action: Reported Results above the RL for samples analyzed after an ICS with analytes that are outside these limits should be flagged "J" as estimated

9. **Spiked Sample Analysis.** Were percent recoveries outside acceptance criteria in either the MS/MSD? **(Y)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
Lot A3E080200 Prep Batch 3134101	Aluminum Antimony Calcium Iron Magnesium Manganese	75-125 75-125 75-125 75-125 75-125 75-125	NC/MSB, NC/MSB 37,41 NC/MSB, NC/MSB NC/MSB, NC/MSB 61,54 NC/MSB, NC/MSB	None
Lot A3E080200 Prep Batch 3134101	Aluminum Antimony Calcium Iron Manganese	75-125 75-125 75-125 75-125 75-125	NC/MSB, NC/MSB 35,35 0.0,27 NC/MSB, NC/MSB NC/MSB, NC/MSB	None

Action: If the MS %R is <30%, results > the MDL are qualified as "J" and non-detects as "R. If the MS %R is 30-74%, results > the MDL are qualified as "J" and non-detects as "UJ. If the MS %R is >125%, results > the MDL are qualified as "J" and non-detects should not be qualified. If the MS/MSD is from a project sample apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

10. **Serial Dilution %D:** Were the calculated % D values within the acceptance criteria (10%) for all target analytes greater than **50X** the MDL? **(N)** *(if NO, list target analyte, %D and affected samples)*

Sample ID	Target Analyte	Serial Dilution (% D)	Associated Samples	Recommendation

42610A-050703-0805	Beryllium Potassium Zinc	12.6 11.8 11.5	**42610A-050703-0805** **42610A-050703-FD** **42610B-050703-0825** **42610C-050703-MSMD** **4264A-050703-0905** **4264B-050703-0915** **4264C-050703-MSMD** **42610C-050703-0850** **4264-050703-0955** **4265A-050703-1020** **4265B-050703-1035** **4265B-050703-FD** **4265C-050703-1055** **G53-050803-0755** **G51-050803-0825** **G52-050803-0835**	Qualify results greater than the MDL as estimated "J", and non-detects as estimated "UJ".

Action: For serial dilution %D results >10%, qualify results > the MDL as "J" and non-detects as "UJ".

F. GENERAL CHEMISTRY

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)** *(if NO, list non-compliant samples)*

Non Compliant Samples

Sample ID	Target Analyte	Holding Time Required	Holding Time Achieved	Action Required

Action: If aqueous CN sample pH <14, positive results are estimated "J" and non-detects qualified "R". If held > 14days, positive results are qualified "J", and non-detects are qualified "R".

2. **Initial Calibration Verification (ICV) Procedures.** Were ICV Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (*Must be calibrated once every 24 hours. Acceptance criteria 70-130 %R for Antimony, Lead, and Thallium, 80-120 %R for Mercury and 90-110% R for all other metals*).

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the ICV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the ICV %R falls in the range 75-80% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the ICV %R is >125% results above the MDL are qualified as estimated "J". If the ICV %R is > 150% all results are rejected "R".

3. **Continuing Calibration Verification Procedures.** Were CCV Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (*Must be calibrated every 2 hours. Acceptance criteria 70-130 %R for Antimony, Lead, and Thallium, 80-120 %R for Mercury, and 90-110% recovery for all other metals*).

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the CCV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the CCV %R falls in the range 75-80% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the CCV %R is >125% results above the MDL are qualified as estimated "J", and non-detects are qualified "R". If the CCV %R is > 150% all results above the MDL are rejected "R".

4. **Blank Sample Analysis (Equipment, Field, Method).** Were target Metals identified in any Blank? **(N)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
	None			

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 5 times (5X) the amount in any blank for the target analytes.

NOTE : Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

5. **Laboratory Control Samples (LCS).** Were percent recoveries outside acceptance criteria in either the LCS or LCSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)* (Serves to monitor the overall performance of the analysis, including the sample preparation. All LCS %R must fall within the control limits of 80-120%.)

LCS ID	Target Analyte	%R	Associated Project Samples	Action

Action: If the %R is 50-79%, qualify results ³MDL as "J" and non-detects as "UJ". If the %R is >120%, qualify results ³MDL as "J" and non-detects should not be qualified. If the %R is <50%, qualify results ³MDL as "J" and non-detects as "R". If the %R is >150%, qualify all results as "R".

6. **Matrix Spike Samples:** Were percent recoveries outside acceptance criteria in either the MS or MSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*Evaluates the effect of the sample matrix on the accuracy of the analyte analysis.

MS/MSD ID	Target Analyte	%R	Associated Project Samples	Action

Action: If the MS %R is <30%, results > the MDL are qualified as "J" and non-detects as "UJ. If the MS %R is 30-74%, results > the MDL are qualified as "J" and non-detects as "UJ. If the MS %R is >125% results, > the MDL are qualified as "J" and non-detects should not be qualified. If the MS/MSD is from a project sample apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

7. **Sample Duplicate:** Were the calculated % RPD values within the acceptance criteria (20%) for all target analytes greater than **5X** the MDL? **(Y)** *(if NO, list target analyte, RPD and affected samples)*

Sample ID	Target Analyte	RPD	Associated Samples	Recommendation
				Qualify results greater than the MDL as estimated "J", and non-detects as estimated "UJ".

Action: Analytes with RPDs greater than 20% for values greater than 5X the RL should be qualified "J" and non-detects "UJ".

49017-026 - SDG#: 3E09216

A. SAMPLE RECIEPT/ CHAIN OF CUSTODY

1. Samples were collected on May 8, 2003 and received at the laboratory on May 9, 2003.
Sample coolers were received at temperatures of 1.7°C and 1.7°C, with wet ice present.

Parameter	Analytical Method	Holding Time Criteria
Cyanide, Total	SW846 9012A	14 Days
Hexavalent Chromium	SW 846 7196A	24 Hours
Mercury in Liquid Waste (Manual Cold-Vapor)	SW 7470A	28 Days
Mercury in Solid Waste (Manual Cold-Vapor)	SW846 7471A	28 Days
Semi-volatile Organic Compounds by GC/MS	SW846 8270C	7 Days Ext./40 Days Post Ext.
Total Residue as Percent Solids	MCAWW 160.3 MOD	7 Days
Trace Inductively Coupled Plasma Metals	SW846 6010B	6 Months

List all project samples in table below. *Identify field QC samples and potential problem samples.*

Lab ID	Sample ID	Matrix	Comments
A3E090216	**G54A-050803-0945**	S	
	G54B-050803-0950	S	
	G54C-050803-0955	S	
A3E090222	**G41A-050803-1100**	S	
	G41A-050803-FD	S	Field Duplicate (G41A-050803-1100)
	G41B-050803-1105	S	
	G41C-080503-1110	S	
	G41D-050803-1120	AQ	
	G84D-050803-1345	AQ	
	G83D-050803-1450	AQ	
A3E090228	**G97A-050803-1600**	S	
	G97B-050803-1610	S	
	G97C-050803-MSMD	S	Matrix Spike, Matrix Spike Duplicate
	G96A-050803-1630	S	
	G96B-050803-1635	S	
	G96B-050803-FD	S	Field Duplicate (G96B-050803-1635)
	G95A-050803-1705	S	
	G95B-050803-1715	S	
	G95B-050803-EB	S	Equipment Blank

2. Case Narrative Issues & Miscellaneous Comments.
. **SVOCs**- Recoveries of 1,4-Dichlorobenzene were out high in the method spike. Since there were not hits detected in any of the associated samples, no corrective action was necessary.

Metals – No ICP Form IX was provided for batches 3132105 and 3132108. The serial dilution was performed on a different client's sample from the same QC batch(es).
Some reporting limits are lower than our standard reporting limits (SRL) but are supported by the laboratory's MDL and/or IDLs; however, there are no standards in the calibration curve low enough to support these value(s). The continuing calibration blanks and method blanks may not support the lower RL.

C. SVOCs (EPA Method 8270C)

Sample ID.	Inst.	Date Extracted	Date Analyzed	Time	Comments
G54A-050803-0945	7	5/12	5/20	11:03	
G54B-050803-0950	7	5/12	5/20	11:32	
G54C-050803-0955	7	5/12	5/20	12:01	

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)**

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: If holding times were not met, positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

2. **GC/MS Instrument Performance Check.** GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. **(Y)** *(if NO, list non compliant instrument/affected samples)*

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: Refer to the Functional Guidelines for Organic Data Review, pages 49-50 for specific actions.

3. **Initial Calibration Procedures.** Were Initial Calibration Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (Percent Relative Standard Deviation (%RSD) must be less than or equal to 30%)

Inst.	Date/ Time	Target Analyte, %RSD	Associated Samples	Corrective Action
7	5/16 18:37	None		Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.

4. **Continuing Calibration Procedures.** Were Continuing Calibration Procedures met? **(N)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (Percent Drift (%D) must be less than or equal to 25%)

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
7	5/20 09:07	4,6-Dinitro-2-methylphenol, -32.4	**G54A-050803-0945** **G54B-050803-0950** **G54C-050803-0955**	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.

5. **Blank Sample Analysis (Trip, Equipment, Field, Method).** Were target SVOCs identified in any Blank? **(N)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank, I-7 5/20/03, 09:36	None			

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the common laboratory contaminants (phthalate esters), or 5 times (5X) the amount for other target compounds.

6. **System Monitoring Compounds Recoveries.** Were surrogate compound recoveries outside acceptance criteria specified by the laboratory? **(N)** *(if YES, indicate surrogate recovery criteria, project sample ID and %R)*

Surrogate Percent Recovery Criteria			
Surrogate		**Aqueous Matrix**	**Solid Matrix**
Nitrobenzene-d5	SRG01		42-110
2-Fluorobiphenyl	SRG02		43-110
Terphenyl-d14	SRG03		37-137
Phenol-d5	SRG04		25-115
2-Fluorophenol	SRG05		11-116
2,4,6-Tribromophenol	SRG06		35-116

Project Sample ID	SRG01 %R	SRG02 %R	SRG03 %R	SRG04 %R	SRG05 %R	SRG06 %R

Action: If the surrogate percent recovery is greater than the upper acceptance limit associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the surrogate percent recovery is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "UJ". If the surrogate percent recovery is less than 10% associated target analyte positive results are qualified "J" and non-detects are qualified "R".

7. **Laboratory Control Samples (LCS), Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries.** Were percent recoveries outside acceptance criteria in either the LCS/LCSD or MS/MSD? **(Y)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
Lab Control Sample	1,4-Dichlorobenene	38-100	107	

Action: If the LCS %R is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the LCS %R is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "R". If the MS/MSD is from a project sample use the same rules as the LCS/LCSD and apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

8. **Internal Standard Recoveries.** Did the calculated response of each IS compound fall within the QA/QC criteria of +100% and –50% of the corresponding CCV standard? **(Y)** *(if NO, indicate project sample, non-compliant IS, %R, analytes affected-obtain from laboratory SOP)*

Project Sample ID	Non-Compliant IS	% Recovery	Analytes Affected

Action: If the internal standard is greater than the upper limit, positive results for the associated target analytes are qualified "J" and non-detects should not be qualified. If the internal standard is less than the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "UJ". If the internal standard is less than 10% of the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "R".

E. METALS (SW846 6010B, ICP-AES)

Sample ID.	Prep Batch	Date	Time	Comments
G41A-050803-1100	3132108	5/12	11:56	
G41A-050803-FD	3132108	5/12	11:58	FD
G41B-050803-1105	3132108	5/12	11:59	
G41C-080503-1110	3132108	5/12	12:02	
G41D-050803-1120	3132105	5/12	11:32	
G84D-050803-1345	3132105	5/12	11:33	
G83D-050803-1450	3132105	5/12	11:34	
G97A-050803-1600	3132108	5/12	12:04	
G97B-050803-1610	3132108	5/12	12:05	
G97C-050803-MSMD	3132108	5/12	12:06	MS/MSD
G96A-050803-1630	3132108	5/12	12:10	
G96B-050803-1635	3132108	5/12	12:11	
G96B-050803-FD	3132108	5/12	12:12	
G95A-050803-1705	3132108	5/12	12:14	
G95B-050803-1715	3132108	5/12	12:17	
G95B-050803-EB	3132105	5/12	11:38	EB-Al 0.073 mg/L, Ca 0.25 mg/L, Cr 0.0019 mg/L, Fe 0.048 mg/L, Mg 0.058 mg/L, Mn 0.0016 mg/L, K 0.16 mg/L

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)** *(if NO, list non-compliant samples)*

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: If aqueous sample pH ³2, positive results are qualified "J", estimated and non-detected analytes as "R", rejected. If held > 180 days, positive results are qualified "J", estimated and non-detected analytes as "R", rejected

2. **Initial Calibration Verification (ICV) Procedures.** Were ICV Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples)*. (*Must be calibrated once every 24 hours. Acceptance criteria 70-130 %R for Antimony, Lead, and Thallium, 80-120 %R for Mercury and 90-110% R for all other metals*).

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the ICV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the ICV %R falls in the range 75-89% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the ICV %R falls in the range 111-125% results above the MDL are qualified as estimated "J", and non-detects should not be qualified. If the ICV %R is >125% results above the MDL are qualified as estimated "J", and non-detects are qualified "R". If the ICV %R is > 160% all results above the MDL are rejected "R".

3. **Continuing Calibration Verification Procedures.** Were CCV Procedures met? **(N)** *(if NO, list non-compliant instrument, target analytes and affected samples)*. (*Must be calibrated every 2 hours. Acceptance criteria 70-130 %R for Antimony, Lead, and Thallium, 80-120 %R for Mercury, and 90-110% recovery for all other metals*).

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action
ICPST	5/12 5:05	Potassium, 112.2		Qualify results greater than the MDL as estimated "J", and non-detects should not be qualified.

ICPST	5/12 6:06	Potassium, 114.2		
ICPST	5/12 7:08	Potassium, 114.4		
ICPST	5/12 8:11	Barium, 110.1 Potassium, 116.0		
ICPST	5/12 9:13	Barium, 110.7 Potassium, 116.9		
ICPST	5/13 12:48	Potassium, 110.3		
ICPST	5/13 1:51	Potassium, 111.4		

Action: If the ICV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the CCV %R falls in the range 75-89% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the CCV %R falls in the range 111-125% results above the MDL are qualified as estimated "J", and non-detects should not be qualified. If the CCV %R is >125% results above the MDL are qualified as estimated "J", and non-detects are qualified "R". If the CCV %R is > 160% all results above the MDL limit are rejected "R".

4. **Blank Sample Analysis (Equipment, Field, Method).** Were target Metals identified in any Blank? **(Y)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank Prep Batch 3132105	Aluminum Calcium Manganese Potassium	0.058 mg/L 0.33 mg/L 0.0015 mg/L 0.19 mg/L	**G41D-050803-1120** **G84D-050803-1345** **G83D-050803-1450** **G95B-050803-EB**	0.58 mg/L 3.3 mg/L 0.015 mg/L 1.9 mg/L
Method Blank Prep Batch 313108	Barium Calcium Copper Iron Magnesium Manganese Potassium	0.18 mg/kg 35.9 mg/kg 0.15 mg/kg 3.9 mg/kg 9.8 mg/kg 0.18 mg/kg 30.3 mg/kg	**G41A-050803-1100** **G41A-050803-FD** **G41B-050803-1105** **G41C-080503-1110** **G97A-050803-1600** **G97B-050803-1610** **G97C-050803-MSMD** **G96A-050803-1630** **G96B-050803-1635** **G96B-050803-FD** **G95A-050803-1705** **G95B-050803-1715**	1.8 mg/kg 359.0 mg/kg 1.5 mg/kg 39.0 mg/kg 98.0 mg/kg 1.8 mg/kg 303.0 mg/kg
Equipment Blank G95B-050803-EB	Aluminum Calcium Chromium Iron Magnesium Manganese Potassium	0.073 mg/L 0.25 mg/L 0.0019 mg/L 0.048 mg/L 0.058 mg/L 0.0016 mg/L 0.16 mg/L	**G41D-050803-1120** **G84D-050803-1345** **G83D-050803-1450** **G41A-050803-1100** **G41A-050803-FD** **G41B-050803-1105** **G41C-080503-1110** **G97A-050803-1600** **G97B-050803-1610** **G97C-050803-MSMD** **G96A-050803-1630** **G96B-050803-1635** **G96B-050803-FD** **G95A-050803-1705**	0.73 mg/L 2.5 mg/L 0.019 mg/L 0.48 mg/L 0.58 mg/L 0.016 mg/L 1.6 mg/L

			G95B-050803-1715	

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the target analytes.

NOTE : Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

5. **Laboratory Control Samples (LCS).** Were percent recoveries outside acceptance criteria in either the LCS or LCSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

(Serves to monitor the overall performance of each step during the analysis, including the sample preparation. All aqueous LCS %R's must fall within the control limits of 80-120%, except for Antimony and Silver which have no fixed control limits.)

LCS ID	Target Analyte	%R	Associated Project Samples	Action

Action: For an aqueous LCS if the %R is 50-79%, qualify results ³MDL as "J" and non-detects as "UJ". If the %R is >120%, qualify results ³MDL as "J" and non-detects should not be qualified. If the %R is <50%, qualify results ³MDL as "J" and non-detects as "R". If the %R is >150%, qualify all results as "R". For the soil LCS, if the %R is > the upper limit qualify results ³MDL as "J" and non-detects should not be qualified. If the %R is < the lower limit qualify results ³MDL as "J" and non-detects as "UJ".

6. **Duplicate Sample Analysis.** Were the calculated % RPD values within the acceptance criteria (20%) for all target analytes greater than **5X** the MDL? **(Y)** *(if NO, list target analyte, RPD and affected samples)*

RPDs for Field Duplicates

Sample ID	Target Analyte	RPD	Associated Samples	Recommendation
G41A-050803-1100 G41A-050803-FD	Calcium Cobalt Lead Magnesium Manganese	150.5 66.7 85.9 90.3 69.9	**G41B-050803-1105** **G41C-080503-1110**	Report average values

Action: Analytes with RPDs greater than 20% should be qualified "J" and non-detects qualified "UJ".

7. **Contract Required Detection Limit (CRDL) Standard:** Were target anlayte reporting limits (RL) below the CRDL? **(Y)** *(if NO, list target analyte, RL, CRDL and indicate reason why the RL was > the CRDL, e.g. dilution for high target compound detection)*

Sample ID	Target Analyte	RL	CRDL	Reason why the RL was > the CRDL

The Contract Required Detection Limit Standard recoveries for Silver (% Rec = 1952.4) and Arsenic (164.2) were above the acceptable limit of 150%.

8. **Interference Check Standard (ICS):** Were all ICS recoveries +/- 20% of the true value? **(Y)** (if NO, list ICS, target analyte(s), %R and affected samples)

ICS ID	Target Analyte	%R	Affected Samples

Action: Reported Results above the RL for samples analyzed after an ICS with analytes that are outside these limits should be flagged "J" as estimated

9. **Spiked Sample Analysis.** Were percent recoveries outside acceptance criteria in either the MS/MSD? **(Y)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
Lot A3E090228	Aluminum	75-125	NC/MSB, NC/MSB	None
Prep Batch 3132108	Antimony	75-125	33,34	
	Calcium	75-125	NC/MSB, NC/MSB	
	Iron	75-125	NC/MSB, NC/MSB	
	Manganese	75-125	NC/MSB, NC/MSB	

Action: If the MS %R is <30%, results > the MDL are qualified as "J" and non-detects as "R. If the MS %R is 30-74%, results > the MDL are qualified as "J" and non-detects as "UJ. If the MS %R is >125%, results > the MDL are qualified as "J" and non-detects should not be qualified. If the MS/MSD is from a project sample apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

10. **Serial Dilution %D:** Were the calculated % D values within the acceptance criteria (10%) for all target analytes greater than **50X** the MDL? **(N)** *(if NO, list target analyte, %D and affected samples)*

Performed on another Client's sample.

Sample ID	Target Analyte	Serial Dilution (% D)	Associated Samples	Recommendation
				Qualify results greater than the MDL as estimated "J", and non-detects as estimated "UJ".

Action: For serial dilution %D results >10%, qualify results > the MDL as "J" and non-detects as "UJ".

F. GENERAL CHEMISTRY

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)** *(if NO, list non-compliant samples)*

Non Compliant Samples

Sample ID	Target Analyte	Holding Time Required	Holding Time Achieved	Action Required

Action: If aqueous CN sample pH <14, positive results are estimated "J" and non-detects qualified "R". If held > 14days, positive results are qualified "J", and non-detects are qualified "R".

2. **Initial Calibration Verification (ICV) Procedures.** Were ICV Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (*Must be calibrated once every 24 hours. Acceptance criteria 70-130 %R for Antimony, Lead, and Thallium, 80-120 %R for Mercury and 90-110% R for all other metals*).

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the ICV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the ICV %R falls in the range 75-80% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the ICV %R is >125% results above the MDL are qualified as estimated "J". If the ICV %R is > 150% all results are rejected "R".

3. **Continuing Calibration Verification Procedures.** Were CCV Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples)*. (*Must be calibrated every 2 hours. Acceptance criteria 70-130 %R for Antimony, Lead, and Thallium, 80-120 %R for Mercury, and 90-110% recovery for all other metals*).

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the CCV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the CCV %R falls in the range 75-80% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the CCV %R is >125% results above the MDL are qualified as estimated "J", and non-detects are qualified "R". If the CCV %R is > 150% all results above the MDL are rejected "R".

4. **Blank Sample Analysis (Equipment, Field, Method).** Were target Metals identified in any Blank? **(Y)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank Lot # 3E09216	Cyanide	0.0036 mg/L	**G41D-050803-1120** **G84D-050803-1345** **G83D-050803-1450** **G95B-050803-EB**	0.036 mg/L

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 5 times (5X) the 69amount in any blank for the target analytes.

NOTE : Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

5. **Laboratory Control Samples (LCS).** Were percent recoveries outside acceptance criteria in either the LCS or LCSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)* (Serves to monitor the overall performance of the analysis, including the sample preparation. All LCS %R must fall within the control limits of 80-120%.)

LCS ID	Target Analyte	%R	Associated Project Samples	Action

Action: If the %R is 50-79%, qualify results ³MDL as "J" and non-detects as "UJ". If the %R is >120%, qualify results ³MDL as "J" and non-detects should not be qualified. If the %R is <50%, qualify results ³MDL as "J" and non-detects as "R". If the %R is >150%, qualify all results as "R".

6. **Matrix Spike Samples:** Were percent recoveries outside acceptance criteria in either the MS or MSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*Evaluates the effect of the sample matrix on the accuracy of the analyte analysis.

MS/MSD ID	Target Analyte	%R	Associated Project Samples	Action

Action: If the MS %R is <30%, results > the MDL are qualified as "J" and non-detects as "UJ. If the MS %R is 30-74%, results > the MDL are qualified as "J" and non-detects as "UJ. If the MS %R is >125% results, > the MDL are qualified as "J" and non-detects should not be qualified. If the MS/MSD is from a project sample apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

7. **Sample Duplicate:** Were the calculated % RPD values within the acceptance criteria (20%) for all target analytes greater than **5X** the MDL? **(Y)** *(if NO, list target analyte, RPD and affected samples)*

Sample ID	Target Analyte	RPD	Associated Samples	Recommendation
				Qualify results greater than the MDL as estimated "J", and non-detects as estimated "UJ".

<u>Action:</u> Analytes with RPDs greater than 20% for values greater than 5X the RL should be qualified "J" and non-detects "UJ".

49017-026 - SDG#: A3E100102

A. SAMPLE RECIEPT/ CHAIN OF CUSTODY

1. Samples were collected on May 9, 2003 and received at the laboratory on May 10, 2003.
Sample cooler was received at temperature 0.8°C, with wet ice present.

Parameter	Analytical Method	Holding Time Criteria
Cyanide, Total	SW846 9012A	14 Days
Mercury in Liquid Waste (Manual Cold-Vapor)	SW 7470A	28 Days
Mercury in Solid Waste (Manual Cold-Vapor)	SW846 7471A	28 Day
Total Residue as Percent Solids	MCAWW 160.3 MOD	7 Days
Trace Inductively Coupled Plasma Metals	SW846 6010B	6 Months

List all project samples in table below. *Identify field QC samples and potential problem samples.*

Lab ID	Sample ID	Matrix	Comments
A3E100102	**G71A-050903-0955**	S	
	G71B-050903-1005	S	
	G71C-050903-1010	S	
	G71D-050903-1020	AQ	

2. Case Narrative Issues & Miscellaneous Comments.
Metals – No ICP Form IX was provided for batch 3134101. The serial dilution was performed on a sample in lot A3E080200 from this client and from the same QC batch in this lot. (Check notes for SDG3 3E08200. Beryllium, Potassium and Zinc out in the serial dilution.)

No ICP Form IX was provided for batch 3134103. The serial dilution was performed on a different client's sample from the same QC batch(es).

Some reporting limits are lower than our standard reporting limits (SRL) but are supported by the laboratory's MDL and/or IDLs; however, there are no standards in the calibration curve low enough to support these value(s). The continuing calibration blanks and method blanks may not support the lower RL.

E. METALS (SW846 6010B, ICP-AES)

Sample ID.	Prep Batch	Date	Time	Comments
G71A-050903-0955	3134101	5/14	14:19	
G71B-050903-1005	3134101	5/14	14:22	
G71C-050903-1010	3134101	5/14	14:23	
G71D-050903-1020	3134103	5/14	11:27	

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)** *(if NO, list non-compliant samples)*

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: If aqueous sample pH ³2, positive results are qualified "J", estimated and non-detected analytes as "R", rejected. If held > 180 days, positive results are qualified "J", estimated and non-detected analytes as "R", rejected

2. **Initial Calibration Verification (ICV) Procedures.** Were ICV Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples)*. (*Must be calibrated once every 24 hours. Acceptance criteria 70-130 %R for Antimony, Lead, and Thallium, 80-120 %R for Mercury and 90-110% R for all other metals*).

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the ICV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the ICV %R falls in the range 75-89% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the ICV %R falls in the range 111-125% results above the MDL are qualified as estimated "J", and non-detects should not be qualified. If the ICV %R is >125% results above the MDL are qualified as estimated "J", and non-detects are qualified "R". If the ICV %R is > 160% all results above the MDL are rejected "R".

3. **Continuing Calibration Verification Procedures.** Were CCV Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples)*. (*Must be calibrated every 2 hours. Acceptance criteria 70-130 %R for Antimony, Lead, and Thallium, 80-120 %R for Mercury, and 90-110% recovery for all other metals*).

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the ICV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the CCV %R falls in the range 75-89% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the CCV %R falls in the range 111-125% results above the MDL are qualified as estimated "J", and non-detects should not be qualified. If the CCV %R is >125% results above the MDL are qualified as estimated "J", and non-detects are qualified "R". If the CCV %R is > 160% all results above the MDL limit are rejected "R".

4. **Blank Sample Analysis (Equipment, Field, Method).** Were target Metals identified in any Blank? **(Y)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank Prep Batch 3134101	Antimony	0.32 mg/kg	**G71A-050903-0955**	3.2 mg/kg
	Barium	0.16 mg/kg	**G71B-050903-1005**	1.6 mg/kg
	Calcium	34.6 mg/kg	**G71C-050903-1010**	346 mg/kg
	Iron	9.5 mg/kg		95.0 mg/kg
	Magnesium	8.7 mg/kg		87 mg/kg
	Manganese	0.14 mg/kg		1.4 mg/kg
	Potassium	25.3 mg/kg		253 mg/kg
	Zinc	1.5 mg/kg		15 mg/kg
Method Blank Prep Batch 3134103	Calcium	0.48 mg/L	**G71D-050903-1020**	4.8 mg/L
	Cobalt	0.00098 mg/L		0.0098 mg/L
	Magnesium	0.096 mg/L		0.96 mg/L
	Manganese	0.0016 mg/L		0.016 mg/L
	Potassium	0.28 mg/L		28.0 mg/L

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the target analytes.

NOTE : Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

5. **Laboratory Control Samples (LCS).** Were percent recoveries outside acceptance criteria in either the LCS or LCSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

(Serves to monitor the overall performance of each step during the analysis, including the sample preparation. All aqueous LCS %R's must fall within the control limits of 80-120%, except for Antimony and Silver which have no fixed control limits.)

LCS ID	Target Analyte	%R	Associated Project Samples	Action

Action: For an aqueous LCS if the %R is 50-79%, qualify results ³MDL as "J" and non-detects as "UJ". If the %R is >120%, qualify results ³MDL as "J" and non-detects should not be qualified. If the %R is <50%, qualify results ³MDL as "J" and non-detects as "R". If the %R is >150%, qualify all results as "R". For the soil LCS, if the %R is > the upper limit qualify results ³MDL as "J" and non-detects should not be qualified. If the %R is < the lower limit qualify results ³MDL as "J" and non-detects as "UJ".

6. **Duplicate Sample Analysis.** Were the calculated % RPD values within the acceptance criteria (20%) for all target analytes greater than **5X** the MDL? **(Y)** *(if NO, list target analyte, RPD and affected samples)*

Sample ID	Target Analyte	RPD	Associated Samples	Recommendation
				Qualify results greater than the MDL as estimated "J", and non-detects as estimated "UJ".

Action: Analytes with RPDs greater than 20% should be qualified "J" and non-detects qualified "UJ".

7. **Contract Required Detection Limit (CRDL) Standard:** Were target anlayte reporting limits (RL) below the CRDL? **(Y)** *(if NO, list target analyte, RL, CRDL and indicate reason why the RL was > the CRDL, e.g. dilution for high target compound detection)*

Sample ID	Target Analyte	RL	CRDL	Reason why the RL was > the CRDL

8. **Interference Check Standard (ICS):** Were all ICS recoveries +/- 20% of the true value? **(Y)** (if NO, list ICS, target analyte(s), %R and affected samples)

ICS ID	Target Analyte	%R	Affected Samples

Action: Reported Results above the RL for samples analyzed after an ICS with analytes that are outside these limits should be flagged "J" as estimated

9. **Spiked Sample Analysis.** Were percent recoveries outside acceptance criteria in either the MS/MSD? **(Y)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
Lot A3E080200	Aluminum	75-125	NC/MSB, NC/MSB	None
Prep Batch 3134101	Antimony	75-125	37, 41	
	Calcium	75-125	NC/MSB, NC/MSB	
	Iron	75-125	NC/MSB, NC/MSB	
	Magnesium	75-125	61,54	
	Manganese	75-125	NC/MSB, NC/MSB	

Lot A3E080200 Prep Batch 3134101	Aluminum Antimony Calcium Iron Magnesium Manganese	75-125 75-125 75-125 75-125 75-125 75-125	NC/MSB, NC/MSB 35,35 0.0, 27 NC/MSB, NC/MSB 35,57 NC/MSB, NC/MSB	None

Action: If the MS %R is <30%, results > the MDL are qualified as "J" and non-detects as "R. If the MS %R is 30-74%, results > the MDL are qualified as "J" and non-detects as "UJ. If the MS %R is >125%, results > the MDL are qualified as "J" and non-detects should not be qualified. If the MS/MSD is from a project sample apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

10. Serial Dilution %D: Were the calculated % D values within the acceptance criteria (10%) for all target analytes greater than **50X** the MDL? **(N)** *(if NO, list target analyte, %D and affected samples)*
Performed on another Client's sample for batch 3134101

Sample ID	Target Analyte	Serial Dilution (% D)	Associated Samples	Recommendation
				Qualify results greater than the MDL as estimated "J", and non-detects as estimated "UJ".

Action: For serial dilution %D results >10%, qualify results > the MDL as "J" and non-detects as "UJ".

F. GENERAL CHEMISTRY

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)** *(if NO, list non-compliant samples)*

Non Compliant Samples

Sample ID	Target Analyte	Holding Time Required	Holding Time Achieved	Action Required

Action: If aqueous CN sample pH <14, positive results are estimated "J" and non-detects qualified "R". If held > 14days, positive results are qualified "J", and non-detects are qualified "R".

2. **Initial Calibration Verification (ICV) Procedures.** Were ICV Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (*Must be calibrated once every 24 hours. Acceptance criteria 70-130 %R for Antimony, Lead, and Thallium, 80-120 %R for Mercury and 90-110% R for all other metals*).

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the ICV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the ICV %R falls in the range 75-80% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the ICV %R is >125% results above the MDL are qualified as estimated "J". If the ICV %R is > 150% all results are rejected "R".

3. **Continuing Calibration Verification Procedures.** Were CCV Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (*Must be calibrated every 2 hours. Acceptance criteria 70-130 %R for Antimony, Lead, and Thallium, 80-120 %R for Mercury, and 90-110% recovery for all other metals*).

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the CCV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the CCV %R falls in the range 75-80% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the CCV %R is >125% results above the MDL are qualified as estimated "J", and non-detects are qualified "R". If the CCV %R is > 150% all results above the MDL are rejected "R".

4. **Blank Sample Analysis (Equipment, Field, Method).** Were target Metals identified in any Blank? **(Y)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank Lot # A3E100102	Cyanide	0.0036 mg/L	**G71D-050903-1020**	0.036 mg/L

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 5 times (5X) the 69amount in any blank for the target analytes.

NOTE : Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

5. **Laboratory Control Samples (LCS).** Were percent recoveries outside acceptance criteria in either the LCS or LCSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)* (Serves to monitor the overall performance of the analysis, including the sample preparation. All LCS %R must fall within the control limits of 80-120%.)

LCS ID	Target Analyte	%R	Associated Project Samples	Action

Action: If the %R is 50-79%, qualify results ³MDL as "J" and non-detects as "UJ". If the %R is >120%, qualify results ³MDL as "J" and non-detects should not be qualified. If the %R is <50%, qualify results ³MDL as "J" and non-detects as "R". If the %R is >150%, qualify all results as "R".

6. **Matrix Spike Samples:** Were percent recoveries outside acceptance criteria in either the MS or MSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*Evaluates the effect of the sample matrix on the accuracy of the analyte analysis.

MS/MSD ID	Target Analyte	%R	Associated Project Samples	Action

Action: If the MS %R is <30%, results > the MDL are qualified as "J" and non-detects as "UJ. If the MS %R is 30-74%, results > the MDL are qualified as "J" and non-detects as "UJ. If the MS %R is >125% results, > the MDL are qualified as "J" and non-detects should not be qualified. If the MS/MSD is from a project sample apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

7. **Sample Duplicate:** Were the calculated % RPD values within the acceptance criteria (20%) for all target analytes greater than **5X** the MDL? **(Y)** *(if NO, list target analyte, RPD and affected samples)*

Sample ID	Target Analyte	RPD	Associated Samples	Recommendation
				Qualify results greater than the MDL as estimated "J", and non-detects as estimated "UJ".

Action: Analytes with RPDs greater than 20% for values greater than 5X the RL should be qualified "J" and non-detects "UJ".

49017-025 - SDG#: 3E13125

A. SAMPLE RECIEPT/ CHAIN OF CUSTODY

1. Samples were collected on May 12, May 13 and May 14, 2003 and received at the laboratory on May 13, May 14 and May 15, 2003.

Sample cooler was (were) received at temperature(s) of 0.8°C and 5.9°C, with wet ice present.

Parameter	Analytical Method	Holding Time Criteria
Cyanide, Total	SW846 9012A	14 Days
Mercury in Solid Waste (Manual Cold Vapor)	SW846 7471A	28 Days
Total Residue as Percent Solids	MCAWW 160.3 MOD	7 Days
Trace Inductively Coupled Plasma (ICP) Metals	SW846 6010B	6 months
Volatile Organic Compounds by GC/MS	SW846 8260B	14 Days

List all project samples in table below. *Identify field QC samples and potential problem samples.*

Lab ID	Sample ID	Matrix	Comments
A3E130125	M39S-051203-1600	SO	
	M39S-051203-1625	SO	
	M39S-051203-1650	SO	
	M39S-051203-TB	AQ	TRIP BLANK
A3E140116	M43S-051203-1420	SO	
	M43S-051203-1445	SO	
	M08D-051203-1645	SO	
	M43S-051203-TB	AQ	TRIP BLANK
A3E140234	M37S-051303-0825	SO	
	M37S-051303-0850	SO	
	M37S-051303-0915	SO	
	M37S-051303-FD	SO	FIELD BLANK
	M37S-051303-TB	AQ	TRIP BLANK
A3E140240	M06D-051303-1710	SO	
	M06D-051303-1720	SO	
A3E150130	W04-051403-1005	AQ	
	W04-051403-TB	AQ	TRIP BLANK
	W03-051403-1155	AQ	
	W02-051403-1415	AQ	
	W12-051403-1605	AQ	
	W10-051403-1800	AQ	

2. Case Narrative Issues & Miscellaneous Comments.
VOC's – Sample M39S-051203-1650 had elevated reporting limits due to TICs.
Metals – No ICP Trace Form IX provided for batch 3143123. The serial dilution was performed on a different client's sample from the same QC batch.

B. VOCs (EPA Method 8260B)

Sample ID.	Inst.	Date	Time	Comments
M39S-051203-1600	12	5/20/03	03:53	
M39S-051203-1625	12	5/20/03	04:16	
M39S-051203-1650	12	5/21/03	07:10	
M39S-051203-TB	11	5/19/03	19:39	TB – Acetone 2.2 ppb, 2-Butanone 0.73 ppb
M43S-051203-1420	12	5/22/03	02:56	
M43S-051203-1445	12	5/21/03	07:55	
M43S-051203-TB	11	5/19/03	19:16	TB – Acetone 2.3 ppb, 2-Butanone 0.75 ppb

M37S-051303-0825	12	5/23/03	00:50	
M37S-051303-0850	12	5/23/03	01:12	
M37S-051303-0915	12	5/23/03	01:34	
M37S-051303-FD	12	5/23/03	01:57	FD
M37S-051303-TB	10	5/20/03	08:04	TB – 2-Butanone 0.87 ppb
W04-051403-1005	10	5/20/03	01:13	
W04-051403-TB	10	5/20/03	01:39	TB – Acetone 1.3 ppb, 2-Butanone 1.3 ppb
W03-051403-1155	10	5/20/03	02:04	
W02-051403-1415	10	5/20/03	02:30	
W12-051403-1605	10	5/20/03	02:56	
W10-051403-1800	10	5/20/03	03:21	

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)** *(if NO, list non-compliant samples)*

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: If holding times were not met, positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

2. **GC/MS Instrument Performance Check.** GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. **(Y)** *(if NO, list non compliant instrument/affected samples)*

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: Refer to the Functional Guidelines for Organic Data Review, pages 10-11 for specific actions.

3. **Initial Calibration Procedures.** Were Initial Calibration Procedures met? **(N)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (Percent Relative Standard Deviation (%RSD) must be less than or equal to 30%)

Inst.	Date/ Time	Target Analyte, %RSD	Associated Samples	Corrective Action
10	4/29/03 15:03	Acetone, 31.272	M37S-051303-TB W04-051403-1005 W04-051403-TB W03-051403-1155 W02-051403-1415 W12-051403-1605 W10-051403-1800	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
11	5/14/03 16:43	None	M39S-051203-TB M43S-051203-TB	
12	5/19/03 18:29	Acetone, 37.655	M39S-051203-1600 M39S-051203-1625 M39S-051203-1650 M43S-051203-1420 M43S-051203-1445 M37S-051303-0825 M37S-051303-0850 M37S-051303-0915 M37S-051303-FD	

4. Continuing Calibration Procedures. Were Continuing Calibration Procedures met? **(N)** *(if NO, list non-compliant instrument, target analytes and affected samples)*. (Percent Drift (%D) must be less than or equal to 25%)

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
10	5/19/03 21:21	4-Methyl-2-pentanone, 25.1 Bromoform, 25.4 Bromomethane, 42.2 2-Hexanone, 31.0 1,2,4-Trichlorobenzene, 40.7	M37S-051303-TB W04-051403-1005 W04-051403-TB W03-051403-1155 W02-051403-1415 W12-051403-1605 W10-051403-1800	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
11	5/19/03 09:41	Acetone, -39.8 2-Butanone, -34.6 2-Hexanone, 41.6	M39S-051203-TB M43S-051203-TB	
12	5/19/03 17:21	Bromoform, 28.1	M39S-051203-1600 M39S-051203-1625 M39S-051203-1650 M43S-051203-1420 M43S-051203-1445 M37S-051303-0825 M37S-051303-0850 M37S-051303-0915 M37S-051303-FD	
12	5/20/03 21:01	Acetone, 26.7 2-Butanone, 26.6	M39S-051203-1600 M39S-051203-1625 M39S-051203-1650 M43S-051203-1420 M43S-051203-1445 M37S-051303-0825 M37S-051303-0850 M37S-051303-0915 M37S-051303-FD	
12	5/21/03 16:03	Acetone, 51.1	M39S-051203-1600 M39S-051203-1625 M39S-051203-1650 M43S-051203-1420 M43S-051203-1445 M37S-051303-0825 M37S-051303-0850 M37S-051303-0915 M37S-051303-FD	
12	5/22/03 16:34	None		

5. Blank Sample Analysis (Trip, Equipment, Field, Method). Were target VOCs identified in any Blank? **(Y)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Trip Blank M39S-051203-TB	Acetone 2-Butanone	2.2 µg/L 0.73 µg/L	M39S-051203-1600 M39S-051203-1625 M39S-051203-1650	22 µg/L 7.3 µg/L
Trip Blank M43S-051203-TB	Acetone 2-Butanone	2.3 µg/L 0.75 µg/L	M43S-051203-1420 M43S-051203-1445 M08D-051203-1645	23 µg/L 7.5 µg/L
Field Blank M37S-051303-FD	None		M37S-051303-0915	

Trip Blank M37S-051303-TB	2-Butanone	0.87 µg/L	M37S-051303-0825 M37S-051303-0850 M37S-051303-0915 M37S-051303-FD M06D-051303-1710 M06D-051303-1720	8.7 µg/L
Trip Blank W04-051403-TB	Acetone 2-Butanone	1.3 µg/L 1.3 µg/L	W04-051403-1005 W03-051403-1155 W02-051403-1415 W12-051403-1605 W10-051403-1800	13 µg/L 13 µg/L
Method Blank, I-10 5/19, 22:39	None		W04-051403-1005 W04-051403-TB W03-051403-1155 W02-051403-1415 W12-051403-1605 W10-051403-1800 M37S-051303-TB	
Method Blank, I-11 5/19, 10:50	None		M43S-051203-TB M39S-051203-TB	
Method Blank, I-12 5/20, 03:31	Methylene Chloride	19 µg/L	M37S-051303-0825 M37S-051303-0850 M37S-051303-0915 M37S-051303-FD M43S-051203-1420 M43S-051203-1445 M39S-051203-1600 M39S-051203-1625 M39S-051203-1650	190 µg/L

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the common laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane), or 5 times (5X) the amount for other target compounds.

NOTE :Trip blank associated samples include all samples shipped within the same sample cooler. Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

6. System Monitoring Compounds Recoveries. Were surrogate compound recoveries outside acceptance criteria specified by the laboratory? **(Y)** *(if YES, indicate surrogate recovery criteria, project sample ID and %R)*

Surrogate Percent Recovery Criteria			
Surrogate		**Aqueous Matrix**	**Solid Matrix**
Dibromofluoromethane	SRG01	59-138	73-122
1,2-Dichloroethane-d4	SRG02	61-130	61-128
Toluene-d8	SRG03	60-143	76-110
4-Bromofluorobenzene	SRG04	47-158	74-116

Project Sample ID	**SRG01 %R**	**SRG02 %R**	**SRG03 %R**	**SRG04 %R**
M39S-051203-1650	77 D	84 D	82 D	182 D
M43S-051203-1420	92 D	100 D	84 D	93 D

Action: If the surrogate percent recovery is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the surrogate percent recovery is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "UJ". If the surrogate percent recovery is less than 10% associated target analyte positive results are qualified "J" and non-detects are qualified "R".

7. **Laboratory Control Samples (LCS), Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries.** Were percent recoveries outside acceptance criteria in either the LCS/LCSD or MS/MSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
		[Insert %R Range]		
		[Insert %R Range]		

Action: If the LCS %R is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the LCS %R is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "R". If the MS/MSD is from a project sample use the same rules as the LCS/LCSD and apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

8. **Internal Standard Recoveries.** Did the calculated response of each IS compound fall within the QA/QC criteria of +100% and –50% of the corresponding CCV standard? **(Y)** *(if NO, indicate project sample, non-compliant IS, %R, analytes affected-obtain from laboratory SOP)*

Project Sample ID	Non-Compliant IS	% Recovery	Analytes Affected
		[Insert %R]	
		[Insert %R]	

Action: If the internal standard is greater than the upper limit, positive results for the associated target analytes are qualified "J" and non-detects should not be qualified. If the internal standard is less than the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "UJ". If the internal standard is less than 10% of the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "R".

E. METALS (SW846 6010B, ICP-AES)

Sample ID.	Prep Batch	Date	Time	Comments
M08D-051203-1645	3143123	5/12/03	16:45	
M06D-051303-1710	3143123	5/13/03	17:10	
M08D-051303-1720	3143123	5/13/03	17:20	

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)** *(if NO, list non-compliant samples)*

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: If aqueous sample pH ³2, positive results are qualified "J", estimated and non-detected analytes as "R", rejected. If held > 180 days, positive results are qualified "J", estimated and non-detected analytes as "R", rejected

2. **Initial Calibration Verification (ICV) Procedures.** Were ICV Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples)*. (*Must be calibrated once every 24 hours. Acceptance criteria 70-130 %R for Antimony, Lead, and Thallium, 80-120 %R for Mercury and 90-110% R for all other metals*).

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the ICV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the ICV %R falls in the range 75-89% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the ICV %R falls in the range 111-125% results above the MDL are qualified as estimated "J", and non-detects should not be

qualified. If the ICV %R is >125% results above the MDL are qualified as estimated "J", and non-detects are qualified "R". If the ICV %R is > 160% all results above the MDL are rejected "R".

3. **Continuing Calibration Verification Procedures.** Were CCV Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (*Must be calibrated every 2 hours. Acceptance criteria 70-130 %R for Antimony, Lead, and Thallium, 80-120 %R for Mercury, and 90-110% recovery for all other metals*).

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the ICV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the CCV %R falls in the range 75-89% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the CCV %R falls in the range 111-125% results above the MDL are qualified as estimated "J", and non-detects should not be qualified. If the CCV %R is >125% results above the MDL are qualified as estimated "J", and non-detects are qualified "R". If the CCV %R is > 160% all results above the MDL limit are rejected "R".

4. **Blank Sample Analysis (Equipment, Field, Method).** Were target Metals identified in any Blank? **(Y)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank	Aluminum	15.5 mg/L	M08D-051203-1645	77.5 mg/L
Prep Batch 3143123	Antimony	0.42 mg/L	M06D-051303-1710	2.1 mg/L
	Barium	0.23 mg/L	M08D-051303-1720	1.15 mg/L
	Calcium	12.0 mg/L		60.0 mg/L
	Iron	4.1 mg/L		41 mg/L
	Manganese	0.14 mg/L		0.70 mg/L
	Potassium	17.0 mg/L		85.0 mg/L

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the target analytes.

NOTE : Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

5. **Laboratory Control Samples (LCS). .** Were percent recoveries outside acceptance criteria in either the LCS or LCSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

(Serves to monitor the overall performance of each step during the analysis, including the sample preparation. All aqueous LCS %R's must fall within the control limits of 80-120%, except for Antimony and Silver which have no fixed control limits.)

LCS ID	Target Analyte	%R	Associated Project Samples	Action

Action: For an aqueous LCS if the %R is 50-79%, qualify results ³MDL as "J" and non-detects as "UJ". If the %R is >120%, qualify results ³MDL as "J" and non-detects should not be qualified. If the %R is <50%, qualify results ³MDL as "J" and non-detects as "R". If the %R is >150%, qualify all results as "R". For the soil LCS, if the %R is > the upper limit qualify results ³MDL as "J" and non-detects should not be qualified. If the %R is < the lower limit qualify results ³MDL as "J" and non-detects as "UJ".

6. **Duplicate Sample Analysis.** Were the calculated % RPD values within the acceptance criteria (20%) for all target analytes greater than **5X** the MDL? **No duplicates were taken.**

Sample ID	Target Analyte	RPD	Associated Samples	Recommendation

				Qualify results greater than the MDL as estimated "J", and non-detects as estimated "UJ".

Action: Analytes with RPDs greater than 20% should be qualified "J" and non-detects qualified "UJ".

7. **Contract Required Detection Limit (CRDL) Standard:** Were target anlayte reporting limits (RL) below the CRDL? **(N)** *(if NO, list target analyte, RL, CRDL and indicate reason why the RL was > the CRDL, e.g. dilution for high target compound detection)*

Sample ID	Target Analyte	RL	Acceptable Range	Reason why the RL was > the CRDL
Lab CRDL ICPST	Antimony	165.7	50-150	

8. **Interference Check Standard (ICS):** Were all ICS recoveries +/- 20% of the true value? **(Y)** (if NO, list ICS, target analyte(s), %R and affected samples)

ICS ID	Target Analyte	%R	Affected Samples

Action: Reported Results above the RL for samples analyzed after an ICS with analytes that are outside these limits should be flagged "J" as estimated

9. **Spiked Sample Analysis.** Were percent recoveries outside acceptance criteria in either the MS/MSD? **(Y)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
Lot 3E13125 Prep Batch 3143123	Aluminum Antimony Iron	75-125 75-125 75-125	NC,MSB 57,63 NC,MSB	None

Action: If the MS %R is <30%, results > the MDL are qualified as "J" and non-detects as "R. If the MS %R is 30-74%, results > the MDL are qualified as "J" and non-detects as "UJ. If the MS %R is >125%, results > the MDL are qualified as "J" and non-detects should not be qualified. If the MS/MSD is from a project sample apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

10. **Serial Dilution %D:** Were the calculated % D values within the acceptance criteria (10%) for all target analytes greater than **50X** the MDL? **The serial dilution was performed on a different client's sample from the same QC batch.**

Sample ID	Target Analyte	Serial Dilution (% D)	Associated Samples	Recommendation
				Qualify results greater than the MDL as estimated "J", and non-detects as estimated "UJ".

Action: For serial dilution %D results >10%, qualify results > the MDL as "J" and non-detects as "UJ".

F. GENERAL CHEMISTRY

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)** *(if NO, list non-compliant samples)*

Non Compliant Samples

Sample ID	Target Analyte	Holding Time Required	Holding Time Achieved	Action Required

Action: If aqueous CN sample pH <14, positive results are estimated "J" and non-detects qualified "R". If held > 14days, positive results are qualified "J", and non-detects are qualified "R".

2. **Initial Calibration Verification (ICV) Procedures.** Were ICV Procedures met? **No initial calibration verification procedures taken.**

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the ICV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the ICV %R falls in the range 75-80% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the ICV %R is >125% results above the MDL are qualified as estimated "J". If the ICV %R is > 150% all results are rejected "R".

3. **Continuing Calibration Verification Procedures.** Were CCV Procedures met? **No continuing calibration verification procedures taken.**

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the CCV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the CCV %R falls in the range 75-80% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the CCV %R is >125% results above the MDL are qualified as estimated "J", and non-detects are qualified "R". If the CCV %R is > 150% all results above the MDL are rejected "R".

4. **Blank Sample Analysis (Equipment, Field, Method).** Were target Metals identified in any Blank? **(N)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank 3E13125	None			

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 5 times (5X) the amount in any blank for the target analytes.

NOTE : Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

5. **Laboratory Control Samples (LCS).** Were percent recoveries outside acceptance criteria in either the LCS or LCSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)* (Serves to monitor the overall performance of the analysis, including the sample preparation. All LCS %R must fall within the control limits of 80-120%.)

LCS ID	Target Analyte	%R	Associated Project Samples	Action

Action: If the %R is 50-79%, qualify results ³MDL as "J" and non-detects as "UJ". If the %R is >120%, qualify results ³MDL as "J" and non-detects should not be qualified. If the %R is <50%, qualify results ³MDL as "J" and non-detects as "R". If the %R is >150%, qualify all results as "R".

6. **Matrix Spike Samples:** Were percent recoveries outside acceptance criteria in either the MS or MSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*Evaluates the effect of the sample matrix on the accuracy of the analyte analysis.

MS/MSD ID	Target Analyte	%R	Associated Project Samples	Action

Action: If the MS %R is <30%, results > the MDL are qualified as "J" and non-detects as "UJ. If the MS %R is 30-74%, results > the MDL are qualified as "J" and non-detects as "UJ. If the MS %R is >125% results, > the MDL are qualified as "J" and non-detects should not be qualified. If the MS/MSD is from a project sample apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

7. **Sample Duplicate:** Were the calculated % RPD values within the acceptance criteria (20%) for all target analytes greater than **5X** the MDL? **(Y)** *(if NO, list target analyte, RPD and affected samples)*

Sample ID	Target Analyte	RPD	Associated Samples	Recommendation
				Qualify results greater than the MDL as estimated "J", and non-detects as estimated "UJ".

Action: Analytes with RPDs greater than 20% for values greater than 5X the RL should be qualified "J" and non-detects "UJ".

49017-026 - SDG#: 3E16165

A. SAMPLE RECIEPT/ CHAIN OF CUSTODY

1. Samples were collected on May 13 and 15, 2003 and received at the laboratory on May 14 and 16, 2003.
Sample coolers were received at temperatures ranging from 2.6 to 5.9°C, with wet ice present.

Parameter	Analytical Method	Holding Time Criteria
Cyanide, Total	SW846 9012A	14 Days
Extractable Petroleum Hydrocarbons	SW846 8015B	28 Days
Mercury in Liquid Waste (Manual Cold-Vapor)	SW846 7470A	28 Days
Mercury in Solid Waste (Manual Cold-Vapor)	SW846 7471A	28 Days
Polychlorinated Biphenyls	SW846 8082	7 Days Ext. Solid/14 Day Ext. AQ/40 Days Post Ext.
Semi-volatile Organic Compounds by GC/MS	SW846 8270C	7 Days Ext./40 Days Post Ext.
Total Residue as Percent Solids	MCAWW 160.3 MOD	7 Days
Trace Inductively Coupled Plasma Metals	SW846 6010B	6 Months
Volatile Organic Compounds by GC/MS	SW846 8260B	14 Days

List all project samples in table below. *Identify field QC samples and potential problem samples.*

Lab ID	Sample ID	Matrix	Comments
A3E160165	**M38S-051503-TB**	AQ	Trip Blank
	M38S-051503-1040	S	
	M38S-051503-1125	S	
	M38S-051503-FD	S	Field Duplicate (M38D-051503-1125)
	M38S-051503-1140	S	
	M42S-051503-1430	S	
	M42S-051503-1445	S	
	M42S-051503-FD	S	Field Duplicate (M42S-051503-1445)
	M42S-051503-1455	S	
	B031-051503-1725	S	
	B031-051503-1750	S	
	B031-051503-1805	S	
	B031-051503-1830	AQ	Matrix Spike/Matrix Spike Duplicate
A3E160306	**M08-051303-1200 (Water Only)**	AQ	Lab split sample
	M08-051303-TB	AQ	Trip Blank
	M10-051303-1215 (Water Layer Only)	AQ	
	M10-051303-1215 (Oil Layer Only)	Oil	Trip Blank
	M03-051303-1515	S	

2. Case Narrative Issues & Miscellaneous Comments.

VOCs- An LCS/LCSD was provided for batch 3145097 since there was insufficient sample volume to perform and MS/MSD. Surrogate recoveries were outside criteria for samples M38S-051503-1140 and M42S-051503-1455. Due to insufficient sample volumee, re-preparation and reanalysis could not occur.
The pH of the sample M08-051303-1200 (WATER ONLY) was greater than 2. The sampls(s) was analyzed within the normal 14 day holding time; however, experimental evidence suggests that some aromatic compounds in wastewater samples, notably Benzene, Toluene, and Ethylbenzene are susceptible to biological degradation if samples are not preserved to a pH of 2.

SVOCs - Samples M08-051303-1200 (WATER ONLY) and M10-051303-1215 (WATER ONLY) had elevated reporting limits due to sample matrix.

Metals – No ICP Tracae Form IX was provided for batches 3142105 and 3147113. The serial dilution was performed on a

different client's sample from the same QC batch(es).

B. VOCs (EPA Method 8260B)

Sample ID.	Inst.	Date	Time	Comments
M38S-051503-TB	11	5/22	21:26	TB-Acetone 1.8 ppb, 2-Butanone 1.4 ppb, MeCl 0.77 ppb, Toluene 0.43 ppb
M38S-051503-1040	12	5/22	18:27	
M38S-051503-1125	12	5/22	18:49	
M38S-051503-FD	12	5/22	19:12	FD (M38D-051503-1125)
M38S-051503-1140	12	5/22	19:34	
M42S-051503-1430	12	5/22	19:57	
M42S-051503-1445	12	5/22	20:19	
M42S-051503-FD	12	5/22	20:42	FD (M42S-051503-1445)
M42S-051503-1455	12	5/22	21:04	
M08-051303-1200 (Water Only)	11	5/22	16:51	
M08-051303-TB	11	5/21	17:09	TB-Acetone, 1.7 ppb, 2-Butanone 0.61 ppb, MeCl 0.39 ppb
M10-051303-1215 (Water Layer Only)	11	5/22	17:15	

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)**

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: If holding times were not met, positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

2. **GC/MS Instrument Performance Check.** GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. **(Y)**

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: Refer to the Functional Guidelines for Organic Data Review, pages 10-11 for specific actions.

3. **Initial Calibration Procedures.** Were Initial Calibration Procedures met? **(N)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (Percent Relative Standard Deviation (%RSD) must be less than or equal to 30%)

Inst.	Date/ Time	Target Analyte, %RSD	Associated Samples	Corrective Action
11	5/14 16:43	None		Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
12	3/19 18:29	Acetone, 37.655	**M38S-051503-1040** **M38S-051503-1125** **M38S-051503-FD** **M38S-051503-1140** **M42S-051503-1430** **M42S-051503-1445** **M42S-051503-FD** **M42S-051503-1455**	

4. Continuing Calibration Procedures. Were Continuing Calibration Procedures met? **(N)** *(if NO, list non-compliant instrument, target analytes and affected samples)*. (Percent Drift (%D) must be less than or equal to 25%)

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
11	5/21 13:19	Acetone –58.1 2-Butanone, -38.8 2-Hexanone, 44.9	**M08-051303-TB**	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
11	5/22 13:03	Acetone, 46.5 2-Hexanone, 43.5 Dichlorodifluoromethane, 26.1	**M38S-051503-TB** **M10-051303-1215** **(Water Layer Only)**	
12	5/22 16:34	None		

5. Blank Sample Analysis (Trip, Equipment, Field, Method). Were target VOCs identified in any Blank? **(Y)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Trip Blank M38S-051503-TB	Acetone 2-Butanone Methylene chloride Toluene	1.8 µg/L 1.4 µg/L 0.77 µg/L 0.43 µg/L	**M38S-051503-1040** **M38S-051503-1125** **M38S-051503-FD** **M38S-051503-1140** **M42S-051503-1430** **M42S-051503-1445** **M42S-051503-FD** **M42S-051503-1455** **B031-051503-1725** **B031-051503-1750** **B031-051503-1805** **B031-051503-1830**	18.0 µg/L 14.0 µg/L 7.7 µg/L 4.3 µg/L
Trip Blank M08-051303-TB	Acetone 2-Butanone Methylene chloride	1.7 µg/L 0.61 µg/L 0.39 µg/L	**M08-051303-1200** **(Water Only)** **M10-051303-1215** **(Water Layer Only)**	17.0 µg/L 6.1 µg/L 3.9 µg/L
Method Blank, I-11 5/21/03, 14:28	None			
Method Blank, I-11 5/22/03, 14:11	Methylene chloride	0.37 µg/L	**M38S-051503-TB** **M08-051303-1200** **M10-051303-1215** **(Water Layer Only)**	3.7 µg/L
Method Blank, I-12 5/22/03, 18:04	Methylene chloride	18 µg/kg	**M38S-051503-1040** **M38S-051503-1125** **M38S-051503-FD** **M38S-051503-1140** **M42S-051503-1430** **M42S-051503-1445** **M42S-051503-FD** **M42S-051503-1455**	180.0 µg/kg

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the common laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane), or 5 times (5X) the amount for other target compounds.

NOTE :Trip blank associated samples include all samples shipped within the same sample cooler. Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

6. **System Monitoring Compounds Recoveries.** Were surrogate compound recoveries outside acceptance criteria specified by the laboratory? **(Y)**

Surrogate Percent Recovery Criteria			
Surrogate		**Aqueous Matrix**	**Solid Matrix**
Dibromofluoromethane	SRG01	73-122	59-138
1,2-Dichloroethane-d4	SRG02	61-128	61-130
Toluene-d8	SRG03	76-110	60-143
4-Bromofluorobenzene	SRG04	74-116	47-158

Project Sample ID	SRG01 %R	SRG02 %R	SRG03 %R	SRG04 %R
M38S-051503-1140	55			
M42S-051503-1455	58			

Action: If the surrogate percent recovery is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the surrogate percent recovery is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "UJ". If the surrogate percent recovery is less than 10% associated target analyte positive results are qualified "J" and non-detects are qualified "R".

7. **Laboratory Control Samples (LCS), Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries.** Were percent recoveries outside acceptance criteria in either the LCS/LCSD or MS/MSD? **(N)**

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples

Action: If the LCS %R is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the LCS %R is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "R". If the MS/MSD is from a project sample use the same rules as the LCS/LCSD and apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

8. **Internal Standard Recoveries.** Did the calculated response of each IS compound fall within the QA/QC criteria of +100% and –50% of the corresponding CCV standard? **(Y)**

Project Sample ID	Non-Compliant IS	% Recovery	Analytes Affected

Action: If the internal standard is greater than the upper limit, positive results for the associated target analytes are qualified "J" and non-detects should not be qualified. If the internal standard is less than the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "UJ". If the internal standard is less than 10% of the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "R".

9. **Duplicate Sample Analysis.** Were the calculated % RPD values within the acceptance criteria (50%) for all target analytes greater than **5X** the RL? **(Y)** *(if NO, list target analyte, RPD and affected samples)*

RPDs for Field Duplicates

Sample ID	Target Analyte	RPD	Associated Samples	Recommendation

C. SVOCs (EPA Method 8270C)

Sample ID.	Inst.	Date Extracted	Date Analyzed	Time	Comments
M08-051303-1200 (Water Only)	9	5/17	5/22	15:16	
M10-051303-1215 (Water Layer Only)	9	5/17	5/22	15:46	

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)**

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: If holding times were not met, positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

2. **GC/MS Instrument Performance Check.** GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. **(Y)** *(if NO, list non compliant instrument/affected samples)*

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: Refer to the Functional Guidelines for Organic Data Review, pages 49-50 for specific actions.

3. **Initial Calibration Procedures.** Were Initial Calibration Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (Percent Relative Standard Deviation (%RSD) must be less than or equal to 30%)

Inst.	Date/ Time	Target Analyte, %RSD	Associated Samples	Corrective Action
9	3/19 16:18			Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.

4. **Continuing Calibration Procedures.** Were Continuing Calibration Procedures met? **(N)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (Percent Drift (%D) must be less than or equal to 25%)

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
9	5/20 12:09	None		Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
9	5/22 07:18	Hexachlorocyclopentadiene, -32.5 4,4-Dinitrophenol-2-methylphenol, -37.1	**M08-051303-1200 (Water Only)** **M10-051303-1215 (Water Layer Only)**	

5. **Blank Sample Analysis (Trip, Equipment, Field, Method).** Were target SVOCs identified in any Blank? **(N)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank, I-9 5/20/03, 15:09	None			

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the common laboratory contaminants (phthalate esters), or 5 times (5X) the amount for other target compounds.

6. **System Monitoring Compounds Recoveries.** Were surrogate compound recoveries outside acceptance criteria specified by the laboratory? **(Y)** *(if YES, indicate surrogate recovery criteria, project sample ID and %R)*

Surrogate Percent Recovery Criteria			
Surrogate		**Aqueous Matrix**	**Solid Matrix**
Nitrobenzene-d5	SRG01	32-112	
2-Fluorobiphenyl	SRG02	30-110	
Terphenyl-d14	SRG03	10-144	
Phenol-d5	SRG04	10-113	
2-Fluorophenol	SRG05	13-110	
2,4,6-Tribromophenol	SRG06	21-122	

Project Sample ID	SRG01 %R	SRG02 %R	SRG03 %R	SRG04 %R	SRG05 %R	SRG06 %R
M08-051303-1200 (Water Only)	**0.0D**	**0.0D**	**0.0D**	**0.0D**	**0.0D**	**0.0D**
M10-051303-1215 (Water Layer Only)	**0.0D**	**0.0D**	**0.0D**	**0.0D**	**0.0D**	**0.0D**

Action: If the surrogate percent recovery is greater than the upper acceptance limit associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the surrogate percent recovery is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "UJ". If the surrogate percent recovery is less than 10% associated target analyte positive results are qualified "J" and non-detects are qualified "R".

7. **Laboratory Control Samples (LCS), Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries.** Were percent recoveries outside acceptance criteria in either the LCS/LCSD or MS/MSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
		[Insert %R Range]		
		[Insert %R Range]		

Action: If the LCS %R is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the LCS %R is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "R". If the MS/MSD is from a project sample use the same rules as the LCS/LCSD and apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

8. **Internal Standard Recoveries.** Did the calculated response of each IS compound fall within the QA/QC criteria of +100% and –50% of the corresponding CCV standard? **(Y)** *(if NO, indicate project sample, non-compliant IS, %R, analytes affected-obtain from laboratory SOP)*

Project Sample ID	Non-Compliant IS	% Recovery	Analytes Affected

Action: If the internal standard is greater than the upper limit, positive results for the associated target analytes are qualified "J" and non-detects should not be qualified. If the internal standard is less than the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "UJ". If the internal standard is less than 10% of the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "R".

D. PCBs (EPA Method 8082)

Sample ID.	Inst.	Date Extracted	Date Analyzed	Time	Comments
M08-051303-1200 (Water Only)	4	5/17	5/20	10:14	
M10-051303-1215 (Water Layer)	2	5/20	5/22	10:18	

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)** *(if NO, list non-compliant samples)*

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: If holding times were not met, positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

2. **Initial Calibration Procedures.** Were Initial Calibration Procedures met? **(N)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (Percent Relative Standard Deviation (%RSD) must be less than or equal to 20%. Two single component peaks may exceed 20%, but must be less than or equal to 30%)

Inst.	Date/ Time	Target Analyte, %RSD	Associated Samples	Corrective Action
2	5/12 06:58	None		Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.
4	4/30 10:42	Aroclor-1232 (2), 21.923 Aroclor-1254 (1), 25.908	**M08-051303-1200 (Water Only)**	

3. **Continuing Calibration Procedures.** Were Continuing Calibration Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (Percent Drift (%D) must be less than or equal to 20%)

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
2	5/10 17:50	None		Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.
4	4/30 08:21	None		
2	5/22 10:05	None		
2	5/22 13:20	None		
4	5/20 09:23	None		
4	5/20 12:46	None		

4. **Blank Sample Analysis (Trip, Equipment, Field, Method).** Were target Aroclors identified in any Blank? **(N)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank, I-4 5/20/03, 10:48	None			
Method Blank, I-2 5/22/03, 11:10	None			

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 5 times (5X) the amount in any blank.

NOTE : Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

5. **System Monitoring Compounds Recoveries.** Were surrogate compound recoveries (Tetrachloro-m-xylene, QC limit = 45-120 and Decachlorobiphenyl, QC limits=24-128 outside acceptance criteria? **(Y)** *(if YES, indicate surrogate recovery criteria, project sample ID and %R)*

Project Sample ID	SRG01 %R	SRG02 %R	Corrective Action
M08-051303-1200 (Water Only)	10 D	5.7 D	
M10-051303-1215 (Water Layer) RE-1	32 D		
Method Blank FN18L1AA		330	

Action: If the surrogate percent recovery is greater than the upper acceptance limit associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the surrogate percent recovery is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "UJ". If the surrogate percent recovery is less than 10% associated target analyte positive results are qualified "J" and non-detects are qualified "R".

6. **Laboratory Control Samples (LCS), Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries.** Were percent recoveries outside acceptance criteria in either the LCS/LCSD or MS/MSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
		[Insert %R Range]		
		[Insert %R Range]		

Action: If the LCS %R is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the LCS %R is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "R". If the MS/MSD is from a project sample use the same rules as the LCS/LCSD and apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

B. TPH Extractable Data (EPA Method 8015B)

Sample ID.	Inst.	Prep Date	Analysis Date	Time	Comments
M10-051303-1215 (Oil Layer Only)	6	5/20	6/4	05:06	
M03-051303-1515	6	5/20	6/4	05:34	

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)**

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: If holding times were not met, positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

2. **Initial Calibration Procedures.** Were Initial Calibration Procedures met? **(Y)**

Inst.	Date/ Time	Target Analyte, %RSD	Associated Samples	Corrective Action
6	5/1 06:34	None		Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
6	6/3 14:20	None		

3. **Continuing Calibration Procedures.** Were Continuing Calibration Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples)*. (Percent Drift (%D) must be less than or equal to 25%)

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
6	4/29 00:01	None		Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
6	6/2 22:45	None		
6	5/22 22:05	None		
6	5/23 03:45	None		
6	6/4 02:15	None		
6	6/4 10:19	None		

4. **Blank Sample Analysis (Trip, Equipment, Field, Method).** Were target VOCs identified in any Blank? **(N)** *(if YES, list type of blank, target analyte concentration and*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank, I-6 5/22/03, 23:30	None			

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the common laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane), or 5 times (5X) the amount for other target compounds.

NOTE :Trip blank associated samples include all samples shipped within the same sample cooler. Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

5. **System Monitoring Compounds Recoveries.** Were surrogate compound recoveries outside acceptance criteria specified by the laboratory? **(Y)**

Surrogate Percent Recovery Criteria	
Surrogate	**Oil Matrix**
Nonane	10-110

Project Sample ID	SRG01 %R
M10-051303-1215 (Oil Layer Only)	0.0D
M03-051303-1215	0.0D

Action: If the surrogate percent recovery is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the surrogate percent recovery is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "UJ". If the surrogate percent recovery is less than 10% associated target analyte positive results are qualified "J" and non-detects are qualified "R".

6. **Laboratory Control Samples (LCS), Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries.** Were percent recoveries outside acceptance criteria in either the LCS/LCSD or MS/MSD? **(N)**

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples

Action: If the LCS %R is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the LCS %R is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "R". If the MS/MSD is from a project sample use the same rules as the LCS/LCSD and apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

E. METALS (SW846 6010B, ICP-AES)

Sample ID.	Prep Batch	Date	Time	Comments
B031-051503-1725	3147113	5/27	14:49	
B031-051503-1750	3147113	5/27	14:53	
B031-051503-1805	3147113	5/27	14:55	
B031-051503-1830	3142105	5/22	11:33	
M08-051303-1200 (Water Only)	3142105	5/22	11:18	
M10-051303-1215	3142105	5/22	11:19	

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)** *(if NO, list non-compliant samples)*

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: If aqueous sample pH ³2, positive results are qualified "J", estimated and non-detected analytes as "R", rejected. If held > 180 days, positive results are qualified "J", estimated and non-detected analytes as "R", rejected

2. **Initial Calibration Verification (ICV) Procedures.** Were ICV Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (*Must be calibrated once every 24 hours. Acceptance criteria 70-130 %R for Antimony, Lead, and Thallium, 80-120 %R for Mercury and 90-110% R for all other metals*).

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the ICV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the ICV %R falls in the range 75-89% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the ICV %R falls in the range 111-125% results above the MDL are qualified as estimated "J", and non-detects should not be

qualified. If the ICV %R is >125% results above the MDL are qualified as estimated "J", and non-detects are qualified "R". If the ICV %R is > 160% all results above the MDL are rejected "R".

3. **Continuing Calibration Verification Procedures.** Were CCV Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (*Must be calibrated every 2 hours. Acceptance criteria 70-130 %R for Antimony, Lead, and Thallium, 80-120 %R for Mercury, and 90-110% recovery for all other metals*).

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the ICV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the CCV %R falls in the range 75-89% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the CCV %R falls in the range 111-125% results above the MDL are qualified as estimated "J", and non-detects should not be qualified. If the CCV %R is >125% results above the MDL are qualified as estimated "J", and non-detects are qualified "R". If the CCV %R is > 160% all results above the MDL limit are rejected "R".

4. **Blank Sample Analysis (Equipment, Field, Method).** Were target Metals identified in any Blank? **(Y)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank Prep Batch 3142105	Antimony Calcium Magnesium Manganese Potassium	0.0084 mg/L 0.27 mg/L 0.083 mg/L 0.00084 mg/L 0.25 mg/L	**B031-051503-1830** **M08-051303-1200** **(Water Only)** **M10-051303-1215**	0.084 mg/L 2.7 mg/L 0.83 mg/L 0.0084 mg/L 2.5 mg/L
Method Blank Prep Batch 3147113	Aluminum Antimony Barium Calcium Manganese Potassium	11.3 mg/kg 0.41 mg/kg 0.17 mg/kg 20.6 mg/kg 0.14 mg/kg 16.4 mg/L	**B031-051503-1725** **B031-051503-1750** **B031-051503-1805**	113.0 mg/kg 4.1 mg/kg 1.7 mg/kg 206.0 mg/kg 1.4 mg/kg 164 mg/L

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the target analytes.

NOTE : Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

5. **Laboratory Control Samples (LCS).** Were percent recoveries outside acceptance criteria in either the LCS or LCSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

(Serves to monitor the overall performance of each step during the analysis, including the sample preparation. All aqueous LCS %R's must fall within the control limits of 80-120%, except for Antimony and Silver which have no fixed control limits.)

LCS ID	Target Analyte	%R	Associated Project Samples	Action

Action: For an aqueous LCS if the %R is 50-79%, qualify results ³MDL as "J" and non-detects as "UJ". If the %R is >120%, qualify results ³MDL as "J" and non-detects should not be qualified. If the %R is <50%, qualify results ³MDL as "J" and non-detects as "R". If the %R is >150%, qualify all results as "R". For the soil LCS, if the %R is > the upper limit qualify results ³MDL as "J" and non-detects should not be qualified. If the %R is < the lower limit qualify results ³MDL as "J" and non-detects as "UJ".

6. **Duplicate Sample Analysis.** Were the calculated % RPD values within the acceptance criteria (20%) for all target analytes greater than **5X** the MDL? **(N)** *(if NO, list target analyte, RPD and affected samples)*

Sample ID	Target Analyte	RPD	Associated Samples	Recommendation
				Report average values

Action: Analytes with RPDs greater than 20% should be qualified "J" and non-detects qualified "UJ".

7. **Contract Required Detection Limit (CRDL) Standard:** Were target anlayte reporting limits (RL) below the CRDL? **(Y)** *(if NO, list target analyte, RL, CRDL and indicate reason why the RL was > the CRDL, e.g. dilution for high target compound detection)*

Sample ID	Target Analyte	RL	CRDL	Reason why the RL was > the CRDL

8. **Interference Check Standard (ICS):** Were all ICS recoveries +/- 20% of the true value? **(Y)** (if NO, list ICS, target analyte(s), %R and affected samples)

ICS ID	Target Analyte	%R	Affected Samples

Action: Reported Results above the RL for samples analyzed after an ICS with analytes that are outside these limits should be flagged "J" as estimated

9. **Spiked Sample Analysis.** Were percent recoveries outside acceptance criteria in either the MS/MSD? **(Y)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
B031-051503-1830	Aluminum	75-125	NC,MSB/NC,MSB	
	Antimony	75-125	38,46	
	Calcium	75-125	NC,MSB/NC,MSB	
	Iron	75-125	NC,MSB/NC,MSB	
	Magnesium	75-125	61	
	Manganese	75-125	NC,MSB/NC,MSB	

Action: If the MS %R is <30%, results > the MDL are qualified as "J" and non-detects as "R. If the MS %R is 30-74%, results > the MDL are qualified as "J" and non-detects as "UJ. If the MS %R is >125%, results > the MDL are qualified as "J" and non-detects should not be qualified. If the MS/MSD is from a project sample apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

10. **Serial Dilution %D:** Were the calculated % D values within the acceptance criteria (10%) for all target analytes greater than **50X** the MDL? **(Y)** *(if NO, list target analyte, %D and affected samples)*

Performed on another client's sample.

Sample ID	Target Analyte	Serial Dilution (% D)	Associated Samples	Recommendation
				Qualify results greater than the MDL as estimated "J", and non-detects as estimated "UJ".

Action: For serial dilution %D results >10%, qualify results > the MDL as "J" and non-detects as "UJ".

F. GENERAL CHEMISTRY

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)** *(if NO, list non-compliant samples)*

Non Compliant Samples

Sample ID	Target Analyte	Holding Time Required	Holding Time Achieved	Action Required

Action: If aqueous CN sample pH <14, positive results are estimated "J" and non-detects qualified "R". If held > 14days, positive results are qualified "J", and non-detects are qualified "R".

2. **Initial Calibration Verification (ICV) Procedures.** Were ICV Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (*Must be calibrated once every 24 hours. Acceptance criteria 70-130 %R for Antimony, Lead, and Thallium, 80-120 %R for Mercury and 90-110% R for all other metals*).

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the ICV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the ICV %R falls in the range 75-80% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the ICV %R is >125% results above the MDL are qualified as estimated "J". If the ICV %R is > 150% all results are rejected "R".

3. **Continuing Calibration Verification Procedures.** Were CCV Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (*Must be calibrated every 2 hours. Acceptance criteria 70-130 %R for Antimony, Lead, and Thallium, 80-120 %R for Mercury, and 90-110% recovery for all other metals*).

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the CCV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the CCV %R falls in the range 75-80% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the CCV %R is >125% results above the MDL are qualified as estimated "J", and non-detects are qualified "R". If the CCV %R is > 150% all results above the MDL are rejected "R".

4. **Blank Sample Analysis (Equipment, Field, Method).** Were target Metals identified in any Blank? **(N)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 5 times (5X) the amount in any blank for the target analytes.

NOTE : Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

5. **Laboratory Control Samples (LCS).** Were percent recoveries outside acceptance criteria in either the LCS or LCSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)* (Serves to monitor the overall performance of the analysis, including the sample preparation. All LCS %R must fall within the control limits of 80-120%.)

LCS ID	Target Analyte	%R	Associated Project Samples	Action

Action: If the %R is 50-79%, qualify results ³MDL as "J" and non-detects as "UJ". If the %R is >120%, qualify results ³MDL as "J" and non-detects should not be qualified. If the %R is <50%, qualify results ³MDL as "J" and non-detects as "R". If the %R is >150%, qualify all results as "R".

6. **Matrix Spike Samples:** Were percent recoveries outside acceptance criteria in either the MS or MSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*Evaluates the effect of the sample matrix on the accuracy of the analyte analysis.

MS/MSD ID	Target Analyte	%R	Associated Project Samples	Action

Action: If the MS %R is <30%, results > the MDL are qualified as "J" and non-detects as "UJ. If the MS %R is 30-74%, results > the MDL are qualified as "J" and non-detects as "UJ. If the MS %R is >125% results, > the MDL are qualified as "J" and non-detects should not be qualified. If the MS/MSD is from a project sample apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

7. **Sample Duplicate:** Were the calculated % RPD values within the acceptance criteria (20%) for all target analytes greater than **5X** the MDL? **(Y)** *(if NO, list target analyte, RPD and affected samples)*

Sample ID	Target Analyte	RPD	Associated Samples	Recommendation
				Qualify results greater than the MDL as estimated "J", and non-detects as estimated "UJ".

Action: Analytes with RPDs greater than 20% for values greater than 5X the RL should be qualified "J" and non-detects "UJ".

49017-025 - SDG#: 3E16322

A. SAMPLE RECIEPT/ CHAIN OF CUSTODY

1. Samples were collected on May 15 and May 16, 2003 and received at the laboratory on May 16 and May 17, 2003
Sample cooler was (were) received at temperature(s) of 1.9°C and 4.8°C, with wet ice present.

Parameter	Analytical Method	Holding Time Criteria
Cyanide, Total	SW846 9012A	14 Days
Mercury in Solid Waste (Manual Cold Vapor)	SW846 7471A	28 Days
Polychlorinated Biphenyls	SW846 8082	7 Days Ext./40 Days Post Ext.
Semi-volatile Organic Compounds by GC/MS	SW846 8270C	7 Days Ext./40 Days Post Ext.
Total Reside as Percent Solids	MCAWW 160.3 MOD	7 Days
Trace Inductively Coupled Plasma Metals	SW846 6010B	6 months
Volatile Organic Compounds by GC/MS	SW846 8260B	14 Days

List all project samples in table below. *Identify field QC samples and potential problem samples.*

Lab ID	Sample ID	Matrix	Comments
A3E160322	W01-051503-0930	AQ	
	W01-051503-TB	AQ	TRIP BLANK
	W07-051503-1120	AQ	
	W13-051503-1330	AQ	
	W13-051503-FD	AQ	FIELD BLANK
	W11-051503-1600	AQ	
	W06-051503-1800	AQ	
A3E170113	M17-051603-TB	AQ	TRIP BLANK
	M17-051603-1120	SO	
	M17-051603-1145	SO	
	M17-051603-1210	SO	
A3E170115	M45S-051603-TB	AQ	TRIP BLANK
	M45S-051603-1225	SO	
	M45S-051603-1220	SO	
	M45S-051603-1430	SO	
	M44S-051603-1444	SO	
	M44S-051603-FD	SO	FIELD BLANK
	M44S-051603-1500	SO	

2. Case Narrative Issues & Miscellaneous Comments.
VOC's – An LCS/LCSD was provided for batch 3145097 since there was insufficient sample volume to perform an MS/MSD. An LCS/LCSD was provided for batch 3142410. The batch MS/MSD was not reported because the associated environmental sample required reanalysis at a different location. Surrogate recoveries were outside criteria for samples M45S-051603-1430, M44S-051603-1444 and M17-051603-1145. Due to insufficient sample volume, re-preparation and reanalysis could not occur.
SVOC's – Recoveries of 1,4-Dichlorobenzene were out high in the method spike. Since there were no hits detected in any of the associated samples, no corrective action was necessary. Samples M45S-051603-1225, M45S-051603-1220, M45S-051603-1430 and M44S-051603-144 had elevated reporting limits due to sample matrix.
PCB's – Sample M45S-051603-1220 had elevated reporting limits due to matrix interference before cleanup.
Metals – No ICP Trace Form IX was provided for batch 3147113. The serial dilution was performed on a different client's sample from the same QC batch(es).

B. VOCs (EPA Method 8260B)

Sample ID.	Inst.	Date	Time	Comments
W01-051503-0930	10	5/23/03	03:28	
W01-051503-TB	10	5/23/03	03:54	TB – Acetone 2.6 ppb, 2-Butanone 1.2 ppb
W07-051503-1120	10	5/23/03	04:19	
W13-051503-1330	10	5/23/03	04:45	
W13-051503-FD	10	5/23/03	05:11	FD – Acetone 2.3 ppb, 1,1-Dichloroethane 0.46 ppb
W11-051503-1600	10	5/23/03	05:37	
W06-051503-1800	10	5/23/03	14:13	
M17-051603-TB	12	5/22/03	02:34	TB
M17-051603-1120	12	5/22/03	21:26	
M17-051603-1145	12	5/22/03	21:49	
M17-051603-1210	12	5/22/03	22:11	
M45S-051603-TB	10	5/23/03	03:02	TB – Acetone 3.8 ppb, 2-Butanone 1.2 ppb
M45S-051603-1225	12	5/22/03	22:34	
M45S-051603-1220	12	5/22/03	22:56	
M45S-051603-1430	12	5/22/03	23:19	
M44S-051603-1444	12	5/22/03	23:42	
M44S-051603-FD	12	5/23/03	00:04	FD
M44S-051603-1500	12	5/23/03	00:27	

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)** *(if NO, list non-compliant samples)*

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: If holding times were not met, positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

2. **GC/MS Instrument Performance Check.** GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. **(Y)** *(if NO, list non compliant instrument/affected samples)*

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: Refer to the Functional Guidelines for Organic Data Review, pages 10-11 for specific actions.

3. **Initial Calibration Procedures.** Were Initial Calibration Procedures met? **(N)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (Percent Relative Standard Deviation (%RSD) must be less than or equal to 30%)

Inst.	Date/ Time	Target Analyte, %RSD	Associated Samples	Corrective Action
10	5/21/03 09:49	None		Qualify positive results as "J", estimated and

12	3/19/03 18:29	Acetone, 37.655	M17-051603-TB M17-051603-1120 M17-051603-1145 M17-051603-1210 M45S-051603-1225 M45S-051603-1220 M45S-051603-140 M44S-051603-1444 M44S-051603-FD M44S-051603-1500	non-detected analytes as "UJ", estimated undetected.

4. **Continuing Calibration Procedures.** Were Continuing Calibration Procedures met? **(N)** *(if NO, list non-compliant instrument, target analytes and affected samples)*. (Percent Drift (%D) must be less than or equal to 25%)

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
10	5/22/03 22:19	None		Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
10	5/23/03 09:56	None		
12	5/21/3 16:03	Acetone, 51.1	M17-051603-TB M17-051603-1120 M17-051603-1145 M17-051603-1210 M45S-051603-1225 M45S-051603-1220 M45S-051603-140 M44S-051603-1444 M44S-051603-FD M44S-051603-1500	
12	5/22/03 16:34	None		

5. **Blank Sample Analysis (Trip, Equipment, Field, Method).** Were target VOCs identified in any Blank? **(N)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Trip Blank W01-051503-TB	Acetone 2-Butanone	2.6 µg/L 1.2 µg/L	W01-051503-0930 W07-051503-1120 W13-051503-1330 W13-051503-FD W11-051503-1600 W06-051503-1800	26 µg/L 12 µg/L
Field Blank W13-051503-FD	Acetone 1,1-Dichloroethane	2.3 µg/L 0.46 µg/L	W13-051503-1330	23 µg/L 2.30 µg/L
Trip Blank M17-051603-TB	None			
Trip Blank M45S-051603-TB	Acetone 2-Butanone	3.8 µg/L 1.2 µg/L	M45S-051603-1225 M45S-051603-1220 M45S-051603-1430 M44S-051603-1444 M44S-051603-FD M44S-051603-1500	38 µg/L 12 µg/L
Field Blank M44S-051603-FD	None			
Method Blank, I-10 5/22/03, 23:36	Methylene Chloride	0.43 µg/L	W01-051503-0930 W01-051503-TB	4.3 µg/L

			W07-051503-1120 W13-051503-1330 W13-051503-FD W11-051503-1600 M45S-051603-TB	
Method Blank, I-10 5/23/03, 11:13	Methylene Chloride	0.48 µg/L	W06-051503-1800	4.8 µg/L
Method Blank, I-12 5/21/03, 17:34	None		M17-051603-TB	
Method Blank, I-12 5/22/03, 18:04	Methylene Chloride	18 µg/L	M17-051603-1120 M17-051603-1145 M17-051603-1210 M45S-051603-1225 M45S-051603-1220 M45S-051603-1430 M44S-051603-1444 M44S-051603-FD M44S-051603-1500	180 µg/L

Action: *In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the common laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane), or 5 times (5X) the amount for other target compounds.*

NOTE :Trip blank associated samples include all samples shipped within the same sample cooler. Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

6. **System Monitoring Compounds Recoveries.** Were surrogate compound recoveries outside acceptance criteria specified by the laboratory? **(Y)** *(if YES, indicate surrogate recovery criteria, project sample ID and %R)*

Surrogate Percent Recovery Criteria			
Surrogate		**Aqueous Matrix**	**Solid Matrix**
Dibromofluoromethane	SRG01	73-122	61-130
1,2-Dichloroethane-d4	SRG02	61-128	60-143
Toluene-d8	SRG03	76-110	47-158
4-Bromofluorobenzene	SRG04	74-116	59-138

Project Sample ID	SRG01 %R	SRG02 %R	SRG03 %R	SRG04 %R
M17-051603-1145		58	61	55
M45S-051603-1430	57			
M45S-051603-1444	56			

Action: *If the surrogate percent recovery is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the surrogate percent recovery is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "UJ". If the surrogate percent recovery is less than 10% associated target analyte positive results are qualified "J" and non-detects are qualified "R".*

7. **Laboratory Control Samples (LCS), Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries.** Were percent recoveries outside acceptance criteria in either the LCS/LCSD or MS/MSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
		[Insert %R Range]		
		[Insert %R Range]		

Action: If the LCS %R is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the LCS %R is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "R". If the MS/MSD is from a project sample use the same rules as the LCS/LCSD and apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

8. **Internal Standard Recoveries.** Did the calculated response of each IS compound fall within the QA/QC criteria of +100% and –50% of the corresponding CCV standard? **(Y)** *(if NO, indicate project sample, non-compliant IS, %R, analytes affected-obtain from laboratory SOP)*

Project Sample ID	Non-Compliant IS	% Recovery	Analytes Affected
		[Insert %R]	
		[Insert %R]	

Action: If the internal standard is greater than the upper limit, positive results for the associated target analytes are qualified "J" and non-detects should not be qualified. If the internal standard is less than the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "UJ". If the internal standard is less than 10% of the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "R".

C. SVOCs (EPA Method 8270C)

Sample ID.	Inst.	Date Extracted	Date Analyzed	Time	Comments
M17-051603-1120	9	5/16/03	5/26/03	12:00	
M17-051603-1145	9	5/16/03	5/26/03	12:30	
M17-051603-1210	9	5/16/03	5/26/03	13:00	
M17-051603-1225	9	5/16/03	5/26/03	16:30	
M17-051603-1220	9	5/16/03	5/26/03	15:30	
M45S-051603-1430	9	5/16/03	5/26/03	16:00	
M44S-051603-1444	9	5/16/03	5/26/03	15:00	
M44S-051603-FD	9	5/16/03	5/26/03	13:30	FD – bis (2-Ethylhexyl phthalate) 26 ppb
M44S-051603-1500	9	5/16/03	5/26/03	14:00	

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)** *(if NO, list non-compliant samples)*

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: If holding times were not met, positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

2. **GC/MS Instrument Performance Check.** GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. **(Y)** *(if NO, list non compliant instrument/affected samples)*

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: Refer to the Functional Guidelines for Organic Data Review, pages 49-50 for specific actions.

3. **Initial Calibration Procedures.** Were Initial Calibration Procedures met? **(N)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (Percent Relative Standard Deviation (%RSD) must be less than or equal to 30%)

Inst.	Date/ Time	Target Analyte, %RSD	Associated Samples	Corrective Action
9	5/19/03 16:18	None		Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.

4. **Continuing Calibration Procedures.** Were Continuing Calibration Procedures met? **(N)** *(if NO, list non-compliant instrument, target analytes and affected samples)*. (Percent Drift (%D) must be less than or equal to 25%)

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
9	5/21/03 10:13	Hexachlorocyclopentadiene, -28.9 4,6 Dinitro-2-methylphenol, -39.4	M17-051603-1120 M17-051603-1145 M17-051603-1210 M17-051603-1225 M17-051603-1220 M45S-051603-1430 M44S-051603-1444 M44S-051603-FD M44S-051603-1500	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
9	5/26/03 10:30	Hexachlorocyclopentadiene, -27.3 4,6 Dinitro-2-methylphenol, -35.3	M17-051603-1120 M17-051603-1145 M17-051603-1210 M17-051603-1225 M17-051603-1220 M45S-051603-1430 M44S-051603-1444 M44S-051603-FD M44S-051603-1500	

5. **Blank Sample Analysis (Trip, Equipment, Field, Method).** Were target SVOCs identified in any Blank? **(Y)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Field Blank M44S-051603-FD	bis (2-Ethylhexyl phthalate)	26 µg/L	M44S-051603-1444	260 µg/L
Method Blank, I-9 5/21/03, 15:11	None			

<u>Action:</u> In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the common laboratory contaminants (phthalate esters), or 5 times (5X) the amount for other target compounds.

6. **System Monitoring Compounds Recoveries.** Were surrogate compound recoveries outside acceptance criteria specified by the laboratory? **(Y)** *(if YES, indicate surrogate recovery criteria, project sample ID and %R)*

Surrogate Percent Recovery Criteria			
Surrogate		**Aqueous Matrix**	**Solid Matrix**
Nitrobenzene-d5	SRG01		42-110
2-Fluorobiphenyl	SRG02		43-100
Terphenyl-d14	SRG03		37-137
Phenol-d5	SRG04		25-115
2-Fluorophenol	SRG05		11-116
2,4,6-Tribromophenol	SRG06		35-116

Project Sample ID	SRG01 %R	SRG02 %R	SRG03 %R	SRG04 %R	SRG05 %R	SRG06 %R
M45S-051603-1225	109D	101D	93D	119D	105D	97D
M45S-051603-1220	74D	74D	73D	82D	70D	66D
M45S-051603-1430	92D	89D	91D	98D	88D	76D
M44S-051603-1444	78D	74D	82D	85D	77D	62D

Action: If the surrogate percent recovery is greater than the upper acceptance limit associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the surrogate percent recovery is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "UJ". If the surrogate percent recovery is less than 10% associated target analyte positive results are qualified "J" and non-detects are qualified "R".

7. **Laboratory Control Samples (LCS), Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries.** Were percent recoveries outside acceptance criteria in either the LCS/LCSD or MS/MSD? **(Y)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
A3E190000-408 Prep Batch # 3139408	1,4-Dichlorobenzene	38-100	103	M17-051603-TB M17-051603-1120 M17-051603-1145 M17-051603-1210

Action: If the LCS %R is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the LCS %R is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "R". If the MS/MSD is from a project sample use the same rules as the LCS/LCSD and apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

8. **Internal Standard Recoveries.** Did the calculated response of each IS compound fall within the QA/QC criteria of +100% and –50% of the corresponding CCV standard? **(Y)** *(if NO, indicate project sample, non-compliant IS, %R, analytes affected-obtain from laboratory SOP)*

Project Sample ID	Non-Compliant IS	% Recovery	Analytes Affected
		[Insert %R]	
		[Insert %R]	

Action: If the internal standard is greater than the upper limit, positive results for the associated target analytes are qualified "J" and non-detects should not be qualified. If the internal standard is less than the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "UJ". If the internal standard is less than 10% of the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "R".

D. PCBs (EPA Method 8082)

Sample ID.	Inst.	Date Extracted	Date Analyzed	Time	Comments
M17-051603-1120	4	05/16/03	05/24/03	00:34	
M17-051603-1145	4	05/16/03	05/24/03	00:50	
M17-051603-1210	4	05/16/03	05/24/03	01:07	
M45S-051603-1225	4	05/16/03	05/24/03	01:24	
M45S-051603-1220	4	05/16/03	05/29/03	16:51	
M45S-051603-1430	4	05/16/03	05/24/03	01:58	
M44S-051603-1444	4	05/16/03	05/24/03	02:48	
M44S-051603-FD	4	05/16/03	05/24/03	03:05	FD
M44S-051603-1500	4	05/16/03	05/24/03	03:22	

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)** *(if NO, list non-compliant samples)*

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: If holding times were not met, positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

2. **Initial Calibration Procedures.** Were Initial Calibration Procedures met? **(N)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (Percent Relative Standard Deviation (%RSD) must be less than or equal to 20%. Two single component peaks may exceed 20%, but must be less than or equal to 30%)

Inst.	Date/ Time	Target Analyte, %RSD	Associated Samples	Corrective Action
4	4/30/03 10:42	Aroclor-1232 (2), 21.923 Aroclor-1248 (2), 20.941 Aroclor-1254 (1), 25.908		Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.
4	5/28/03 08:03	None		

3. **Continuing Calibration Procedures.** Were Continuing Calibration Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (Percent Drift (%D) must be less than or equal to 20%)

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
4	4/30/03 08:21	None		Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.
4	5/27/03 23:37	None		
4	5/23/03 20:38	None		
4	5/24/03 02:31	None		
4	5/24/03 07:51	None		
4	5/29/03 14:36	None		
4	5/29/03 20:07	None		

4. **Blank Sample Analysis (Trip, Equipment, Field, Method).** Were target Aroclors identified in any Blank? **(N)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Field Blank M44S-051603-FD	None			
Method Blank, I-4 5/24/03, 02:15	None			

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 5 times (5X) the amount in any blank.

NOTE : Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

5. **System Monitoring Compounds Recoveries.** Were surrogate compound recoveries (Tetrachloro-m-xylene and Decachlorobiphenyl) outside acceptance criteria of 30-150% R? **(Y)** *(if YES, indicate surrogate recovery criteria, project sample ID and %R)*

Project Sample ID	SRG01 %R	SRG02 %R	Corrective Action
M45S-051603-1225		9.8	
M45S-051603-1220	95D	93D	
M45S-051603-1500	26		

Action: If the surrogate percent recovery is greater than the upper acceptance limit associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the surrogate percent recovery is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "UJ". If the surrogate percent recovery is less than 10% associated target analyte positive results are qualified "J" and non-detects are qualified "R".

6. **Laboratory Control Samples (LCS), Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries.** Were percent recoveries outside acceptance criteria in either the LCS/LCSD or MS/MSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
		[Insert %R Range]		
		[Insert %R Range]		

Action: If the LCS %R is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the LCS %R is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "R". If the MS/MSD is from a project sample use the same rules as the LCS/LCSD and apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

E. METALS (SW846 6010B, ICP-AES)

Sample ID.	Prep Batch	Date	Time	Comments
M17-051603-1120	3147113	5/16/03	11:20	
M17-051603-1145	3147113	5/16/03	11:45	
M17-051603-1210	3147113	5/16/03	12:10	
M45S-051603-1225	3147113	5/16/03	12:25	
M45S-051603-1220	3147113	5/16/03	12:20	
M45S-051603-1430	3147113	5/16/03	14:30	
M44S-051603-1444	3147113	5/16/03	14:44	
M44S-051603-FD	3147113	5/16/03	-	FD
M44S-051603-1500	3147113	5/16/03	15:00	

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)** *(if NO, list non-compliant samples)*

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: If aqueous sample pH ³2, positive results are qualified "J", estimated and non-detected analytes as "R", rejected. If held > 180 days, positive results are qualified "J", estimated and non-detected analytes as "R", rejected

2. **Initial Calibration Verification (ICV) Procedures.** Were ICV Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (*Must be calibrated once every 24 hours. Acceptance criteria 70-130 %R for Antimony, Lead, and Thallium, 80-120 %R for Mercury and 90-110% R for all other metals*).

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the ICV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the ICV %R falls in the range 75-89% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the ICV %R falls in the range 111-125% results above the MDL are qualified as estimated "J", and non-detects should not be qualified. If the ICV %R is >125% results above the MDL are qualified as estimated "J", and non-detects are qualified "R". If the ICV %R is > 160% all results above the MDL are rejected "R".

3. **Continuing Calibration Verification Procedures.** Were CCV Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples)*. (*Must be calibrated every 2 hours. Acceptance criteria 70-130 %R for Antimony, Lead, and Thallium, 80-120 %R for Mercury, and 90-110% recovery for all other metals*).

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the ICV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the CCV %R falls in the range 75-89% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the CCV %R falls in the range 111-125% results above the MDL are qualified as estimated "J", and non-detects should not be qualified. If the CCV %R is >125% results above the MDL are qualified as estimated "J", and non-detects are qualified "R". If the CCV %R is > 160% all results above the MDL limit are rejected "R".

4. **Blank Sample Analysis (Equipment, Field, Method).** Were target Metals identified in any Blank? **(Y)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Field Blank M44S-051603-FD	None			
Method Blank Prep Batch 3147113	Aluminum Antimony Barium Calcium Manganese Potassium	11.3 mg/L 0.41 mg/L 0.17 mg/L 20.6 mg/L 0.14 mg/L 16.4 mg/L	M17-051603-1120 M17-051603-1145 M17-051603-1210 M45S-051603-1245 M45S-051603-1220 M45S-051603-1430 M44S-051603-1444 M44S-051603-FD M44S-051603-1500	56.5 mg/L 2.05 mg/L 0.85 mg/L 103.0 mg/L 0.70 mg/L 82.0 mg/L

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the target analytes.

NOTE : Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

5. **Laboratory Control Samples (LCS). .** Were percent recoveries outside acceptance criteria in either the LCS or LCSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

(Serves to monitor the overall performance of each step during the analysis, including the sample preparation. All aqueous LCS %R's must fall within the control limits of 80-120%, except for Antimony and Silver which have no fixed control limits.)

LCS ID	Target Analyte	%R	Associated Project Samples	Action

Action: For an aqueous LCS if the %R is 50-79%, qualify results ³MDL as "J" and non-detects as "UJ". If the %R is >120%, qualify results ³MDL as "J" and non-detects should not be qualified. If the %R is <50%, qualify results ³MDL as "J" and non-detects as "R". If the %R is >150%, qualify all results as "R". For the soil LCS, if the %R is > the upper limit qualify results ³MDL as "J" and non-detects should not be qualified. If the %R is < the lower limit qualify results ³MDL as "J" and non-detects as "UJ".

6. **Duplicate Sample Analysis.** Were the calculated % RPD values within the acceptance criteria (20%) for all target analytes greater than **5X** the MDL? **No duplicate samples were taken.**

Sample ID	Target Analyte	RPD	Associated Samples	Recommendation
				Qualify results greater than the MDL as estimated "J", and non-detects as estimated "UJ".

Action: Analytes with RPDs greater than 20% should be qualified "J" and non-detects qualified "UJ".

7. **Contract Required Detection Limit (CRDL) Standard:** Were target anlayte reporting limits (RL) below the CRDL? **(Y)** *(if NO, list target analyte, RL, CRDL and indicate reason why the RL was > the CRDL, e.g. dilution for high target compound detection)*

Sample ID	Target Analyte	RL	CRDL	Reason why the RL was > the CRDL

8. **Interference Check Standard (ICS):** Were all ICS recoveries +/- 20% of the true value? **(Y)** (if NO, list ICS, target analyte(s), %R and affected samples)

ICS ID	Target Analyte	%R	Affected Samples

Action: Reported Results above the RL for samples analyzed after an ICS with analytes that are outside these limits should be flagged "J" as estimated

9. **Spiked Sample Analysis.** Were percent recoveries outside acceptance criteria in either the MS/MSD? **(Y)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
Lot 3E16322	Aluminum	75-125	NC/MSB,NC/MSB	M17-051603-1120
Prep Batch 3147113	Antimony	75-125	38,46	M17-051603-1145
	Calcium	75-125	NC/MSB,NC/MSB	M17-051603-1210
	Iron	75-125	NC/MSB,NC/MSB	M45S-051603-TB
	Magnesium	75-125	61	M45S-051603-1225
	Manganese	75-125	NC/MSB,NC/MSB	M45S-051603-1220
				M45S-051603-1430
				M44S-051603-1444
				M44S-051603-1500

Action: If the MS %R is <30%, results > the MDL are qualified as "J" and non-detects as "R. If the MS %R is 30-74%, results > the MDL are qualified as "J" and non-detects as "UJ. If the MS %R is >125%, results > the MDL are qualified as "J" and non-detects should not be qualified. If the MS/MSD is from a project sample apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

10. **Serial Dilution %D:** Were the calculated % D values within the acceptance criteria (10%) for all target analytes greater than **50X** the MDL? **The serial dilution was performed on a different client's sample from the same QC batch.**

Sample ID	Target Analyte	Serial Dilution (% D)	Associated Samples	Recommendation
				Qualify results greater than the MDL as estimated "J", and non-detects as estimated "UJ".

Action: For serial dilution %D results >10%, qualify results > the MDL as "J" and non-detects as "UJ".

F. GENERAL CHEMISTRY

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)** *(if NO, list non-compliant samples)*

Non Compliant Samples

Sample ID	Target Analyte	Holding Time Required	Holding Time Achieved	Action Required

Action: If aqueous CN sample pH <14, positive results are estimated "J" and non-detects qualified "R". If held > 14days, positive results are qualified "J", and non-detects are qualified "R".

2. **Initial Calibration Verification (ICV) Procedures.** Were ICV Procedures met? **No initial calibration verification procedures taken.**

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the ICV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the ICV %R falls in the range 75-80% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the ICV %R is >125% results above the MDL are qualified as estimated "J". If the ICV %R is > 150% all results are rejected "R".

3. **Continuing Calibration Verification Procedures.** Were CCV Procedures met? **No cotinuing calibration verification procedures taken.**

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the CCV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the CCV %R falls in the range 75-80% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the CCV %R is >125% results above the MDL are qualified as estimated "J", and non-detects are qualified "R". If the CCV %R is > 150% all results above the MDL are rejected "R".

4. **Blank Sample Analysis (Equipment, Field, Method).** Were target Metals identified in any Blank? **(N)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
	None			

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 5 times (5X) the amount in any blank for the target analytes.

NOTE : Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

5. **Laboratory Control Samples (LCS).** Were percent recoveries outside acceptance criteria in either the LCS or LCSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)* (Serves to monitor the overall performance of the analysis, including the sample preparation. All LCS %R must fall within the control limits of 80-120%.)

LCS ID	Target Analyte	%R	Associated Project Samples	Action

Action: If the %R is 50-79%, qualify results ³MDL as "J" and non-detects as "UJ". If the %R is >120%, qualify results ³MDL as "J" and non-detects should not be qualified. If the %R is <50%, qualify results ³MDL as "J" and non-detects as "R". If the %R is >150%, qualify all results as "R".

6. **Matrix Spike Samples:** Were percent recoveries outside acceptance criteria in either the MS or MSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*Evaluates the effect of the sample matrix on the accuracy of the analyte analysis.

MS/MSD ID	Target Analyte	%R	Associated Project Samples	Action

Action: If the MS %R is <30%, results > the MDL are qualified as "J" and non-detects as "UJ. If the MS %R is 30-74%, results > the MDL are qualified as "J" and non-detects as "UJ. If the MS %R is >125% results, > the MDL are qualified as "J" and non-detects should not be qualified. If the MS/MSD is from a project sample apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

7. **Sample Duplicate:** Were the calculated % RPD values within the acceptance criteria (20%) for all target analytes greater than **5X** the MDL? **(Y)** *(if NO, list target analyte, RPD and affected samples)*

Sample ID	Target Analyte	RPD	Associated Samples	Recommendation
				Qualify results greater than the MDL as estimated "J", and non-detects as estimated "UJ".

Action: Analytes with RPDs greater than 20% for values greater than 5X the RL should be qualified "J" and non-detects "UJ".

49017-026 - SDG#: 3E17116

A. SAMPLE RECIEPT/ CHAIN OF CUSTODY

1. Samples were collected on May 16, 17, 19 and 20, 2003 and received at the laboratory on May 17, 20 and 21, 2003.
Sample coolers were received at temperatures ranging from 3.2 to 4.7°C, with wet ice present.

Parameter	Analytical Method	Holding Time Criteria
Cyanide, Total	SW846 9012A	14 Days
Mercury in Solid Waste (Manual Cold-Vapor)	SW846 7471A	28 Days
Total Residue as Percent Solids	MCAWW 160.3 MOD	7 Days
Trace Inductively Coupled Plasma Metals	SW846 6010B	6 Months
Volatile Organic Compounds by GC/MS	SW846 8260B	14 Days

List all project samples in table below. *Identify field QC samples and potential problem samples.*

Lab ID	Sample ID	Matrix	Comments
A3E170116	**W20-051603-0925**	AQ	
	W20-051603-TB	AQ	Trip Blank
	W14-051603-1125	AQ	
	W15-051603-1340	AQ	
	W21-051603-1655	AQ	
A3E200193	**628D-051903-TB**	AQ	Trip Blank
	628D-051903-1655	S	
	628D-051903-1720	S	
	628D-051903-1745	S	
A3E200196	**118D-051903-0930**	S	
	118D-051903-0955	S	
	118D-051903-TB	AQ	Trip Blank
A3E200200	**M27D-051703-TB**	AQ	Trip Blank
	M27D-051703-1030	S	
	M27D-051703-1100	S	
	M27D-051703-1135	S	
A3E210128	**630D-052003-TB**	AQ	Trip Blank
	630D-052003-0830	S	
	630D-052003-0850	S	
	630S-052003-1245	S	
	630S-052003-1300	S	
	631D-052003-1415	S	
	631D-052003-1440	S	

2. Case Narrative Issues & Miscellaneous Comments.
VOCs- An LCS/LCSD was provided for batch 3149395 since there was insufficient sample volume to perform and MS/MSD.

Metals – No ICP form IX was provided for batch 3147124. The serial dilution was performed on a different client's sample from the same QC batch(es).
Some reporting limits are lower than our standard reporting limits (SRL) but are supported by the laboratory's MDL and/or IDLs; however, there are no standards in the calibration curve low enough to support these value(s). The continuing calibration blanks and method blanks may not support the lower RL.

B. VOCs (EPA Method 8260B)

Sample ID.	Inst.	Date	Time	Comments
W20-051603-0925	10	5/23	00:02	
W20-051603-TB	10	5/23	0:28	TB-Acetone 3.5 ppb, 2-Butanone 1.2 ppb
W14-051603-1125	10	5/23	00:53	
W15-051603-1340	10	5/23	13:47	
W21-051603-1655	10	5/23	01:45	
628D-051903-TB	10	5/29	16:06	TB-Acetone 3.0 ppb, 2-Butanone 1.3 ppb
628D-051903-1655	12	5/28	05:36	
628D-051903-1720	12	5/28	05:58	
628D-051903-1745	12	5/28	06:21	
118D-051903-0930	12	5/28	06:43	
118D-051903-0955	12	5/28	07:06	
118D-051903-TB	10	5/29	16:32	TB-Acetone 4.0 ppb, 2-Butanone 1.2 ppb
M27D-051703-TB	7	5/29	13:28	TB-Acetone 2.1 ppb, 2-Butanone 0.96 ppb
M27D-051703-1030	12	5/25	23:27	
M27D-051703-1100	12	5/25	23:50	
M27D-051703-1135	12	5/26	00:12	
630D-052003-TB	7	5/29	13:50	TB-Acetone 1.6 ppb
630D-052003-0830	12	5/29	03:41	
630D-052003-0850	12	5/29	04:03	
630S-052003-1245	12	5/29	04:26	
630S-052003-1300	12	5/29	04:48	
631D-052003-1415	12	5/29	05:11	
631D-052003-1440	12	5/29	05:33	

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)**

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: If holding times were not met, positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

2. **GC/MS Instrument Performance Check.** GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. **(Y)**

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: Refer to the Functional Guidelines for Organic Data Review, pages 10-11 for specific actions.

3. **Initial Calibration Procedures.** Were Initial Calibration Procedures met? **(N)**

Inst.	Date/ Time	Target Analyte, %RSD	Associated Samples	Corrective Action
7	5/27 11:46	Trichloroethene, 32.318	**M27D-051703-TB** **630D-052003-TB**	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
10	5/21 09:49	None		
12	3/19 18:29	Acetone, 37.655	**628D-051903-1655** **628D-051903-1720** **628D-051903-1745** **118D-051903-0930** **118D-051903-0955** **M27D-051703-1030** **M27D-051703-1100** **M27D-051703-1135** **630D-052003-0830** **630D-052003-0850** **630S-052003-1245** **630S-052003-1300** **631D-052003-1415** **631D-052003-1440**	
12	5/27 19:00	None		

4. **Continuing Calibration Procedures.** Were Continuing Calibration Procedures met? **(N)** *(if NO, list non-compliant instrument, target analytes and affected samples)*. (Percent Drift (%D) must be less than or equal to 25%)

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
7	5/29 07:56	Acetone, -31.8	**M27D-051703-TB** **630D-052003-TB**	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
10	5/22 22:19	None		
10	5/23 09:56	None		
10	5/29 10:04	Bromomethane, 56.8	**628D-051903-TB** **118D-051903-TB**	
12	5/24 09:41	Acetone, 60.2 2-Hexanone, 25.5	**None?**	
12	5/25 12:54	Acetone, 54.6	**M27D-051703-1030** **M27D-051703-1100** **M27D-051703-1135**	
12	5/28 04:06	Acetone, 35.4	**628D-051903-1655** **628D-051903-1720** **628D-051903-1745** **118D-051903-0930** **118D-051903-0955**	
12	5/29 02:11	Acetone, 30.2	**630D-052003-0830** **630D-052003-0850** **630S-052003-1245** **630S-052003-1300** **631D-052003-1415** **631D-052003-1440**	

5. **Blank Sample Analysis (Trip, Equipment, Field, Method).** Were target VOCs identified in any Blank? **(Y)** *(if YES, list type of blank, target analyte concentration and affected samples.)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to

				this value
Trip Blank W20-051603-TB	Acetone 2-Butanone	3.5 µg/L 1.2 µg/L	**W20-051603-0925** **W14-051603-1125** **W15-051603-1340** **W21-051603-1655**	35.0 µg/L 12.0 µg/L
Trip Blank 628D-051903-TB	Acetone 2-Butanone	3.0 µg/L 1.3 µg/L	**628D-051903-1655** **628D-051903-1720** **628D-051903-1745**	30.0 µg/L 13.0 µg/L
Trip Blank 118D-051903-TB	Acetone 2-Butanone	4.0 µg/L 1.2 µg/L	**118D-051903-0930** **118D-051903-0955**	40.0 µg/L 12.0 µg/L
Trip Blank M27D-051703-TB	Acetone 2-Butanone	2.1 µg/L 0.96 µg/L	**M27D-051703-1030** **M27D-051703-1100** **M27D-051703-1135**	21.0 µg/L 9.6 µg/L
Trip Blank 630D-052003-TB	Acetone	1.6 µg/L	**630D-052003-0830** **630D-052003-0850** **630S-052003-1245** **630S-052003-1300** **631D-052003-1415** **631D-052003-1440**	16.0 µg/L
Method Blank, I-7 5/29/03, 09:24	1,2,4-Trichlorobenzene	0.82 µg/L	**M27D-051703-TB** **630D-052003-TB**	4.1 µg/L
Method Blank, I-10, 5/22/03, 23:36	Methylene chloride	0.43 µg/L	**W20-051603-0925** **W20-051603-TB** **W14-051603-1125** **W21-051603-1655**	4.3 µg/L
Method Blank, I-10 5/23/03, 11:13	Methylene chloride	0.48 µg/L	**W15-051603-1340**	4.8 µg/L
Method Blank, I-10 5/29/03, 11:47	Methylene chloride	0.48 µg/L	**628D-051903-TB** **118D-051903-TB**	4.8 µg/L
Method Blank, I-12 5/24/03, 14:33	None			
Method Blank, I-12 , 5/28/03, 05:13	Acetone	57 µg/kg	**628D-051903-1655** **628D-051903-1720** **628D-051903-1745** **118D-051903-0930** **118D-051903-0955**	570.0 µg/kg
Method Blank, I-12 5/29/03, 03:18	None			

<u>Action:</u> In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the common laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane), or 5 times (5X) the amount for other target compounds.

NOTE :Trip blank associated samples include all samples shipped within the same sample cooler. Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

6. **System Monitoring Compounds Recoveries.** Were surrogate compound recoveries outside acceptance criteria specified by the laboratory? **(N)**

Surrogate Percent Recovery Criteria		
Surrogate	**Aqueous Matrix**	**Solid Matrix**
Dibromofluoromethane SRG01	73-122	59-138

1,2-Dichloroethane-d4	SRG02	61-128	61-130
Toluene-d8	SRG03	76-110	60-143
4-Bromofluorobenzene	SRG04	74-116	47-158

Project Sample ID	SRG01 %R	SRG02 %R	SRG03 %R	SRG04 %R

Action: If the surrogate percent recovery is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the surrogate percent recovery is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "UJ". If the surrogate percent recovery is less than 10% associated target analyte positive results are qualified "J" and non-detects are qualified "R".

7. **Laboratory Control Samples (LCS), Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries.** Were percent recoveries outside acceptance criteria in either the LCS/LCSD or MS/MSD? **(Y)**

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
Lab MS/MSD	Benzene	78-118	73	None

Action: If the LCS %R is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the LCS %R is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "R". If the MS/MSD is from a project sample use the same rules as the LCS/LCSD and apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

8. **Internal Standard Recoveries.** Did the calculated response of each IS compound fall within the QA/QC criteria of +100% and –50% of the corresponding CCV standard? **(Y)**

Project Sample ID	Non-Compliant IS	% Recovery	Analytes Affected

Action: If the internal standard is greater than the upper limit, positive results for the associated target analytes are qualified "J" and non-detects should not be qualified. If the internal standard is less than the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "UJ". If the internal standard is less than 10% of the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "R".

9. **Duplicate Sample Analysis.** Were the calculated % RPD values within the acceptance criteria (50%) for all target analytes greater than **5X** the RL? **(Y)** *(if NO, list target analyte, RPD and affected samples)*

No field duplicates taken

Sample ID	Target Analyte	RPD	Associated Samples	Recommendation

E. METALS (SW846 6010B, ICP-AES)

Sample ID.	Prep Batch	Date	Time	Comments
631D-052003-1415	3147124	5/27	15:45	
631D-052003-1440	3147124	5/27	15:46	

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)** *(if NO, list non-compliant samples)*

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: If aqueous sample pH ³2, positive results are qualified "J", estimated and non-detected analytes as "R", rejected. If held > 180 days, positive results are qualified "J", estimated and non-detected analytes as "R", rejected

2. Initial Calibration Verification (ICV) Procedures. Were ICV Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples)*. (*Must be calibrated once every 24 hours. Acceptance criteria 70-130 %R for Antimony, Lead, and Thallium, 80-120 %R for Mercury and 90-110% R for all other metals*).

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the ICV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the ICV %R falls in the range 75-89% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the ICV %R falls in the range 111-125% results above the MDL are qualified as estimated "J", and non-detects should not be qualified. If the ICV %R is >125% results above the MDL are qualified as estimated "J", and non-detects are qualified "R". If the ICV %R is > 160% all results above the MDL are rejected "R".

3. Continuing Calibration Verification Procedures. Were CCV Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples)*. (*Must be calibrated every 2 hours. Acceptance criteria 70-130 %R for Antimony, Lead, and Thallium, 80-120 %R for Mercury, and 90-110% recovery for all other metals*).

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the ICV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the CCV %R falls in the range 75-89% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the CCV %R falls in the range 111-125% results above the MDL are qualified as estimated "J", and non-detects should not be qualified. If the CCV %R is >125% results above the MDL are qualified as estimated "J", and non-detects are qualified "R". If the CCV %R is > 160% all results above the MDL limit are rejected "R".

4. Blank Sample Analysis (Equipment, Field, Method). Were target Metals identified in any Blank? **(Y)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank	Aluminum	18.2 mg/kg	**631D-052003-1415**	182.0 mg/kg
Prep Batch 3147124	Barium	0.19 mg/kg	**631D-052003-1440**	1.9 mg/kg
	Calcium	27.1 mg/kg		271.0 mg/kg
	Iron	8.6 mg/kg		86.0 mg/kg
	Magnesium	5.8 mg/kg		58.0 mg/kg
	Manganese	0.76 mg/kg		7.6 mg/kg
	Potassium	15.9 mg/kg		159.0 mg/kg

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the target analytes.

NOTE : Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

5. Laboratory Control Samples (LCS). Were percent recoveries outside acceptance criteria in either the LCS or LCSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

(Serves to monitor the overall performance of each step during the analysis, including the sample preparation. All aqueous LCS %R's must fall within the control limits of 80-120%, except for Antimony and Silver which have no fixed control limits.)

LCS ID	Target Analyte	%R	Associated Project Samples	Action

Action: For an aqueous LCS if the %R is 50-79%, qualify results ³MDL as "J" and non-detects as "UJ". If the %R is >120%, qualify results ³MDL as "J" and non-detects should not be qualified. If the %R is <50%, qualify results ³MDL as "J" and non-detects as "R". If the %R is >150%, qualify all results as "R". For the soil LCS, if the %R is > the upper limit qualify results ³MDL as "J" and non-detects should not be qualified. If the %R is < the lower limit qualify results ³MDL as "J" and non-detects as "UJ".

6. **Duplicate Sample Analysis.** Were the calculated % RPD values within the acceptance criteria (20%) for all target analytes greater than **5X** the MDL? **(Y)** *(if NO, list target analyte, RPD and affected samples)*

Sample ID	Target Analyte	RPD	Associated Samples	Recommendation
				Report average values

Action: Analytes with RPDs greater than 20% should be qualified "J" and non-detects qualified "UJ".

7. **Contract Required Detection Limit (CRDL) Standard:** Were target anlayte reporting limits (RL) below the CRDL? **(Y)** *(if NO, list target analyte, RL, CRDL and indicate reason why the RL was > the CRDL, e.g. dilution for high target compound detection)*

Sample ID	Target Analyte	RL	CRDL	Reason why the RL was > the CRDL

Antimony was outside the acceptable range 165.7 (50-150%) in the Contract Required Detection Limit Standard.

8. **Interference Check Standard (ICS):** Were all ICS recoveries +/- 20% of the true value? **(Y)** (if NO, list ICS, target analyte(s), %R and affected samples)

ICS ID	Target Analyte	%R	Affected Samples

Action: Reported Results above the RL for samples analyzed after an ICS with analytes that are outside these limits should be flagged "J" as estimated

9. **Spiked Sample Analysis.** Were percent recoveries outside acceptance criteria in either the MS/MSD? **(Y)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
Lab MS	Aluminum	75 – 125	NC,MSB/NC,MSB	
Lot# A3E190124	Antimony	75 – 125	73	
	Calcium	75 – 125	NC,MSB/NC,MSB	
	Iron	75 – 125	NC,MSB/NC,MSB	
	Magnesium	75 – 125	NC,MSB/NC,MSB	
	Manganese	75 – 125	NC,MSB/NC,MSB	

Action: If the MS %R is <30%, results > the MDL are qualified as "J" and non-detects as "R. If the MS %R is 30-74%, results > the MDL are qualified as "J" and non-detects as "UJ. If the MS %R is >125%, results > the MDL are qualified as "J" and non-detects

should not be qualified. If the MS/MSD is from a project sample apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

10. Serial Dilution %D: Were the calculated % D values within the acceptance criteria (10%) for all target analytes greater than **50X** the MDL? **(Y)** *(if NO, list target analyte, %D and affected samples)*
Performed on another client's sample

Sample ID	Target Analyte	Serial Dilution (% D)	Associated Samples	Recommendation
				Qualify results greater than the MDL as estimated "J", and non-detects as estimated "UJ".

Action: For serial dilution %D results >10%, qualify results > the MDL as "J" and non-detects as "UJ".

F. GENERAL CHEMISTRY

1. Holding Times. Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)** *(if NO, list non-compliant samples)*

Non Compliant Samples

Sample ID	Target Analyte	Holding Time Required	Holding Time Achieved	Action Required

Action: If aqueous CN sample pH <14, positive results are estimated "J" and non-detects qualified "R". If held > 14days, positive results are qualified "J", and non-detects are qualified "R".

2. Initial Calibration Verification (ICV) Procedures. Were ICV Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples)*. (*Must be calibrated once every 24 hours. Acceptance criteria 70-130 %R for Antimony, Lead, and Thallium, 80-120 %R for Mercury and 90-110% R for all other metals*).

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the ICV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the ICV %R falls in the range 75-80% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the ICV %R is >125% results above the MDL are qualified as estimated "J". If the ICV %R is > 150% all results are rejected "R".

3. Continuing Calibration Verification Procedures. Were CCV Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples)*. (*Must be calibrated every 2 hours. Acceptance criteria 70-130 %R for Antimony, Lead, and Thallium, 80-120 %R for Mercury, and 90-110% recovery for all other metals*).

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the CCV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the CCV %R falls in the range 75-80% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the CCV %R is >125% results above the MDL are qualified as estimated "J", and non-detects are qualified "R". If the CCV %R is > 150% all results above the MDL are rejected "R".

4. Blank Sample Analysis (Equipment, Field, Method). Were target Metals identified in any Blank? **(N)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results

				with a "U" if £ to this value
	None			

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 5 times (5X) the amount in any blank for the target analytes.

NOTE : Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

5. **Laboratory Control Samples (LCS).** Were percent recoveries outside acceptance criteria in either the LCS or LCSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)* (Serves to monitor the overall performance of the analysis, including the sample preparation. All LCS %R must fall within the control limits of 80-120%.)

LCS ID	Target Analyte	%R	Associated Project Samples	Action

Action: If the %R is 50-79%, qualify results ³MDL as "J" and non-detects as "UJ". If the %R is >120%, qualify results ³MDL as "J" and non-detects should not be qualified. If the %R is <50%, qualify results ³MDL as "J" and non-detects as "R". If the %R is >150%, qualify all results as "R".

6. **Matrix Spike Samples:** Were percent recoveries outside acceptance criteria in either the MS or MSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*Evaluates the effect of the sample matrix on the accuracy of the analyte analysis.

MS/MSD ID	Target Analyte	%R	Associated Project Samples	Action

Action: If the MS %R is <30%, results > the MDL are qualified as "J" and non-detects as "UJ. If the MS %R is 30-74%, results > the MDL are qualified as "J" and non-detects as "UJ. If the MS %R is >125% results, > the MDL are qualified as "J" and non-detects should not be qualified. If the MS/MSD is from a project sample apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

7. **Sample Duplicate:** Were the calculated % RPD values within the acceptance criteria (20%) for all target analytes greater than **5X** the MDL? **(Y)** *(if NO, list target analyte, RPD and affected samples)*

Sample ID	Target Analyte	RPD	Associated Samples	Recommendation
				Qualify results greater than the MDL as estimated "J", and non-detects as estimated "UJ".

Action: Analytes with RPDs greater than 20% for values greater than 5X the RL should be qualified "J" and non-detects "UJ".

49017-025 - SDG#: 3E22173

A. SAMPLE RECIEPT/ CHAIN OF CUSTODY

1. Samples were collected on May 21, 2003 and received at the laboratory on May 22, 2003
Sample cooler was (were) received at temperature(s) of 4.3°C,2.9°C and 5.9°C, with wet ice present.

Parameter	Analytical Method	Holding Time Criteria
Cyanide, Total	SW846 9012A	14 Days
Mercury in Solid Waste (Manual Cold Vapor)	SW846 7471A	28 Days
Polychlorinated Biphenyls	SW846 8082	7 Days Ext./40 Days Post Ext.
Semi-volatile Organic Compounds by GC/MS	SW846 8270C	7 Days Ext./40 Days Post Ext.
Total Residue as Percent Solids	MCAWW 160.3 MOD	7 Days
Trace Inductively Coupled Plasma Metals	SW846 6010B	6 months
Volatile Organic Compounds by GC/MS	SW846 8260B	14 Days

List all project samples in table below. *Identify field QC samples and potential problem samples.*

Lab ID	Sample ID	Matrix	Comments
A3E220173	631S-052103-TB	AQ	TRIP BLANK
	631S-052103-0815	SO	
	631S-052103-FD	SO	FIELD BLANK
	631S-052103-0830	SO	
A3E220187	4418-052103-TB	AQ	TRIP BLANK
	4418-052103-1115	SO	
	4418-052103-1150	SO	
	4418-052103-1205	SO	
	635S-052103-1645	SO	
	635S-052103-1740	SO	
	635S-052103-1810	SO	
A3E220191	4004-052103-0940	AQ	
	4004-052103-TB	AQ	TRIP BLANK
	4005-052103-1245	AQ	
	4003-052103-1545	AQ	
	4601-052103-1800	AQ	
	4601-052103-FD	AQ	FIELD BLANK

2. Case Narrative Issues & Miscellaneous Comments.
VOC's - Surrogate recoveries were outside criteria for samples 631S-052103-FD and 635S-052103-1740. Due to insufficient sample volume, re-preparation and reanalysis could not occur.
SVOC's - Batches 3142450, 3142451, 3142442 contained more than one type of analyte lists. A separate batches 3142452, 3142454, 3142443 had to be created due to reporting limitations and is associated with the original batch. Samples 4418-052103-1150, 4418-052103-1205 and 635S-052103-1740 had elevated reporting limits due to sample matrix.
Metals - No ICP Trace Form IX was provided for batches 3147128 and 3147124. The serial dilution was performed on a different client's sample from the same QC bacth(es).

B. VOCs (EPA Method 8260B)

Sample ID.	Inst.	Date	Time	Comments
631S-052103-TB	7	5/29/03	00:57	TB - Acetone 2.1 ppb, 2-Butanone 1.0 ppb
631S-052103-0815	12	5/29/03	07:03	
631S-052103-FD	12	5/29/03	08:10	FD
631S-052103-0830	12	5/29/03	08:33	
4418-052103-TB	7	5/29/03	01:18	TB - Acetone 2.6 ppb, 2-Butanone 0.92 ppb
4418-052103-1115	12	5/29/03	08:55	
4418-052103-1150	12	5/29/03	09:18	
4418-052103-1205	12	5/29/03	09:40	
635S-052103-1645	12	5/29/03	10:03	
635S-052103-1740	12	5/29/03	10:25	
635S-052103-1810	12	5/29/03	10:47	
4004-052103-0940	10	5/28/03	14:13	
4004-052103-TB	10	5/28/03	14:39	TB - Acetone 2.7 ppb, 2-Butanone 1.3 ppb
4005-052103-1245	10	5/28/03	15:05	
4003-052103-1545	10	5/28/03	15:31	
4601-052103-1800	10	5/28/03	15:56	
4601-052103-FD	10	5/28/03	16:22	FD - Acetone 1.8 ppb

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)** *(if NO, list non-compliant samples)*

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: If holding times were not met, positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

2. **GC/MS Instrument Performance Check.** GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. **(Y)** *(if NO, list non compliant instrument/affected samples)*

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: Refer to the Functional Guidelines for Organic Data Review, pages 10-11 for specific actions.

3. **Initial Calibration Procedures.** Were Initial Calibration Procedures met? **(N)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (Percent Relative Standard Deviation (%RSD) must be less than or equal to 30%)

Inst.	Date/ Time	Target Analyte, %RSD	Associated Samples	Corrective Action
7	5/27/03 11:46	Trichloroethene, 32.318	631S-052103-TB 4418-052103-TB	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
10	5/21/03 09:49	None	4004-052103-0940 4004-052103-TB 4005-052103-1245 4003-052103-1545 4601-052103-1800 4601-052103-FD	

12	5/27/03 19:00	None	4418-052103-1115 4418-052103-1150 4418-052103-1205 635S-052103-1645 635S-052103-1740 635S-052103-1810 631S-052103-0815 631S-052103-FD 631S-052103-0830	

4. **Continuing Calibration Procedures.** Were Continuing Calibration Procedures met? **(N)** *(if NO, list non-compliant instrument, target analytes and affected samples)*. (Percent Drift (%D) must be less than or equal to 25%)

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
7	5/28/03 20:35	Acetone, -33.6	631S-052103-TB 4418-052103-TB	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
10	5/28/03 09:30	2-Hexanone, 53.1 Acetone, 106.5 2-Butanone, 57.2 4-Methyl-2-pentanone, 27.8 Bromomethane, 37.5	4004-052103-0940 4004-052103-TB 4005-052103-1245 4003-052103-1545 4601-052103-1800 4601-052103-FD	
12	5/29/03 02:11	Acetone, 30.2	4418-052103-1115 4418-052103-1150 4418-052103-1205 635S-052103-1645 635S-052103-1740 635S-052103-1810 631S-052103-0815 631S-052103-FD 631S-052103-0830	

5. **Blank Sample Analysis (Trip, Equipment, Field, Method).** Were target VOCs identified in any Blank? **(Y)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Trip Blank 631S-052103-TB	Acetone 2-Butanone	2.1 µg/L 1.0 µg/L	631S-052103-0815 631S-052103-FD 631S-052103-0830	21 µg/L 10 µg/L
Field Blank 631S-052103-FD	None			
Trip Blank 4418-052103-TB	Acetone 2-Butanone	2.6 µg/L 0.92 µg/L	4418-052103-1115 4418-052103-1150 4418-052103-1205 635S-052103-1645 635S-052103-1740 635S-052103-1810	26 µg/L 9.2 µg/L
Trip Blank 4004-052103-TB	Acetone 2-Butanone	2.7 µg/L 1.3 µg/L	4004-052103-0940 4005-052103-1245 4003-052103-1545 4601-052103-1800 4601-052103-FD	27 µg/L 13 µg/L
Field Blank 4601-052103-FD	Acetone	1.8 µg/L	4601-052103-1800	18 µg/L
Method Blank, I-7 5/28/03, 22:02	1,2,4-Trichlorobenzene	0.79 µg/L	4418-052103-TB 631S-052103-TB	3.95 µg/L

Method Blank, I-10 5/28/03, 11:13	Acetone Bromomethane	1.6 µg/L 0.31 µg/L	4004-052103-0940 4004-052103-TB 4005-052103-1245 4003-052103-1545 4601-052103-1800 4601-052103-FD	16 µg/L 1.55 µg/L
Method Blank, I-12 5/29/03, 06:40	None			

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the common laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane), or 5 times (5X) the amount for other target compounds.

NOTE :Trip blank associated samples include all samples shipped within the same sample cooler. Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

6. **System Monitoring Compounds Recoveries.** Were surrogate compound recoveries outside acceptance criteria specified by the laboratory? **(Y)** *(if YES, indicate surrogate recovery criteria, project sample ID and %R)*

Surrogate Percent Recovery Criteria			
Surrogate		**Aqueous Matrix**	**Solid Matrix**
Dibromofluoromethane	SRG01	73-122	59-138
1,2-Dichloroethane-d4	SRG02	61-128	61-130
Toluene-d8	SRG03	76-110	60-143
4-Bromofluorobenzene	SRG04	74-116	47-158

Project Sample ID	SRG01 %R	SRG02 %R	SRG03 %R	SRG04 %R
631S-052103-FD	56			
635S-052103-1740	53	59		

Action: If the surrogate percent recovery is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the surrogate percent recovery is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "UJ". If the surrogate percent recovery is less than 10% associated target analyte positive results are qualified "J" and non-detects are qualified "R".

7. **Laboratory Control Samples (LCS), Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries.** Were percent recoveries outside acceptance criteria in either the LCS/LCSD or MS/MSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
		[Insert %R Range]		
		[Insert %R Range]		

Action: If the LCS %R is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the LCS %R is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "R". If the MS/MSD is from a project sample use the same rules as the LCS/LCSD and apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

8. **Internal Standard Recoveries.** Did the calculated response of each IS compound fall within the QA/QC criteria of +100% and –50% of the corresponding CCV standard? **(Y)** *(if NO, indicate project sample, non-compliant IS, %R, analytes affected-obtain from laboratory SOP)*

Project Sample ID	Non-Compliant IS	% Recovery	Analytes Affected
		[Insert %R]	
		[Insert %R]	

Action: If the internal standard is greater than the upper limit, positive results for the associated target analytes are qualified "J" and non-detects should not be qualified. If the internal standard is less than the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "UJ". If the internal standard is less than 10% of the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "R".

C. SVOCs (EPA Method 8270C)

Sample ID.	Inst.	Date Extracted	Date Analyzed	Time	Comments
4418-052103-1115	6	5/21/03	5/29/03	15:44	
4418-052103-1150	6	5/21/03	5/29/03	16:43	
4418-052103-1205	9	5/21/03	5/28/03	02:26	
635S-052103-1645	6	5/21/03	5/29/03	15:15	
635S-052103-1740	6	5/21/03	5/29/03	16:14	
635S-052103-1810	9	5/21/03	5/27/03	19:27	
4004-052103-0940	9	5/21/03	5/28/03	17:51	
4005-052103-1245	9	5/21/03	5/28/03	18:51	
4003-052103-1545	9	5/21/03	5/28/03	18:21	

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)** *(if NO, list non-compliant samples)*

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: If holding times were not met, positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

2. **GC/MS Instrument Performance Check.** GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. **(Y)** *(if NO, list non compliant instrument/affected samples)*

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: Refer to the Functional Guidelines for Organic Data Review, pages 49-50 for specific actions.

3. **Initial Calibration Procedures.** Were Initial Calibration Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (Percent Relative Standard Deviation (%RSD) must be less than or equal to 30%)

Inst.	Date/ Time	Target Analyte, %RSD	Associated Samples	Corrective Action
6	5/27/03 06:26	None		Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
9	5/19/03 16:18	None		

4. **Continuing Calibration Procedures.** Were Continuing Calibration Procedures met? **(N)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (Percent Drift (%D) must be less than or equal to 25%)

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
6	5/28/03 07:14	None		Qualify positive results as "J", estimated and

9	5/27/03 14:56	None		non-detected analytes as "UJ", estimated undetected.
6	5/29/03 07:25	None		Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
9	5/28/03 08:23	Hexachlorocyclopentadiene, -51.2	635S-052103-1810 4004-052103-0940 4005-052103-1245 4003-052103-1545 4418-052103-1205	

5. **Blank Sample Analysis (Trip, Equipment, Field, Method).** Were target SVOCs identified in any Blank? **(N)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank, I-9 5/28/03, 08:53	None			
Method Blank, I-9 5/27/03, 15:26	None			
Method Blank, I-6 5/28/03, 11:40	None			

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the common laboratory contaminants (phthalate esters), or 5 times (5X) the amount for other target compounds.

6. **System Monitoring Compounds Recoveries.** Were surrogate compound recoveries outside acceptance criteria specified by the laboratory? **(Y)** *(if YES, indicate surrogate recovery criteria, project sample ID and %R)*

Surrogate Percent Recovery Criteria			
Surrogate		**Aqueous Matrix**	**Solid Matrix**
Nitrobenzene-d5	SRG01	32-112	42-110
2-Fluorobiphenyl	SRG02	30-110	43-100
Terphenyl-d14	SRG03	10-144	37-137
Phenol-d5	SRG04	10-113	25-115
2-Fluorophenol	SRG05	13-110	11-116
2,4,6-Tribromophenol	SRG06	21-122	35-116

Project Sample ID	SRG01 %R	SRG02 %R	SRG03 %R	SRG04 %R	SRG05 %R	SRG06 %R
4418-052103-1150	0.0D	0.0D	0.0D	0.0D	0.0D	0.0D
4418-052103-1205	0.0D	0.0D	0.0D	75D	84D	0.0D
635S-052103-1740	65D	57D	57D	70D	72D	113D
4005-052103-1245	73D	61D	54D	72D	66D	68D

Action: If the surrogate percent recovery is greater than the upper acceptance limit associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the surrogate percent recovery is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "UJ". If the surrogate percent recovery is less than 10% associated target analyte positive results are qualified "J" and non-detects are qualified "R".

7. **Laboratory Control Samples (LCS), Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries.** Were percent recoveries outside acceptance criteria in either the LCS/LCSD or MS/MSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
		[Insert %R Range]		
		[Insert %R Range]		

Action: If the LCS %R is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the LCS %R is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "R". If the MS/MSD is from a project sample use the same rules as the LCS/LCSD and apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

8. **Internal Standard Recoveries.** Did the calculated response of each IS compound fall within the QA/QC criteria of +100% and –50% of the corresponding CCV standard? **(Y)** *(if NO, indicate project sample, non-compliant IS, %R, analytes affected-obtain from laboratory SOP)*

Project Sample ID	Non-Compliant IS	% Recovery	Analytes Affected
		[Insert %R]	
		[Insert %R]	

Action: If the internal standard is greater than the upper limit, positive results for the associated target analytes are qualified "J" and non-detects should not be qualified. If the internal standard is less than the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "UJ". If the internal standard is less than 10% of the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "R".

D. PCBs (EPA Method 8082)

Sample ID.	Inst.	Date Extracted	Date Analyzed	Time	Comments
4418-052103-1115	4	5/21/03	5/28/03	16:03	
4418-052103-1150	4	5/21/03	5/28/03	16:19	
4418-052103-1205	4	5/21/03	5/28/03	16:36	
635S-052103-1645	4	5/21/03	5/28/03	16:53	
635S-052103-1740	4	5/21/03	5/28/03	17:10	
635S-052103-1810	4	5/21/03	5/28/03	17:27	

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)** *(if NO, list non-compliant samples)*

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: If holding times were not met, positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

2. **Initial Calibration Procedures.** Were Initial Calibration Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (Percent Relative Standard Deviation (%RSD) must be less than or equal to 20%. Two single component peaks may exceed 20%, but must be less than or equal to 30%)

Inst.	Date/ Time	Target Analyte, %RSD	Associated Samples	Corrective Action
4	5/28/03 08:03	None		Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.

3. **Continuing Calibration Procedures.** Were Continuing Calibration Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (Percent Drift (%D) must be less than or equal to 20%)

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
4	5/27/03 23:37	None		Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.
4	5/28/03 11:35	None		
4	5/28/03 18:35	None		

4. **Blank Sample Analysis (Trip, Equipment, Field, Method).** Were target Aroclors identified in any Blank? **(N)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank, I-4 5/28/03, 17:44	None			

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 5 times (5X) the amount in any blank.

NOTE : Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

5. **System Monitoring Compounds Recoveries.** Were surrogate compound recoveries (Tetrachloro-m-xylene and Decachlorobiphenyl) outside acceptance criteria of 30-150% R? **(N)** *(if YES, indicate surrogate recovery criteria, project sample ID and %R)*

Project Sample ID	SRG01 %R	SRG02 %R	Corrective Action

Action: If the surrogate percent recovery is greater than the upper acceptance limit associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the surrogate percent recovery is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "UJ". If the surrogate percent recovery is less than 10% associated target analyte positive results are qualified "J" and non-detects are qualified "R".

9. **Laboratory Control Samples (LCS), Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries.** Were percent recoveries outside acceptance criteria in either the LCS/LCSD or MS/MSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
		[Insert %R Range]		
		[Insert %R Range]		

Action: If the LCS %R is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the LCS %R is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "R". If the MS/MSD is from a project sample use the same rules as the LCS/LCSD and apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

E. METALS (SW846 6010B, ICP-AES)

Sample ID.	Prep Batch	Date	Time	Comments
4418-052103-1115	3147124	5/21/03	11:15	
4418-052103-1150	3147124	5/21/03	11:50	

4418-052103-1205	3147124	5/21/03	12:05	
4004-052103-0940	3147128	5/21/03	09:40	
4118-052103-1245	3147128	5/21/03	12:45	
4118-052103-1545	3147128	5/21/03	15:45	

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)** *(if NO, list non-compliant samples)*

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: If aqueous sample pH ³2, positive results are qualified "J", estimated and non-detected analytes as "R", rejected. If held > 180 days, positive results are qualified "J", estimated and non-detected analytes as "R", rejected

2. **Initial Calibration Verification (ICV) Procedures.** Were ICV Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (*Must be calibrated once every 24 hours. Acceptance criteria 70-130 %R for Antimony, Lead, and Thallium, 80-120 %R for Mercury and 90-110% R for all other metals*).

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the ICV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the ICV %R falls in the range 75-89% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the ICV %R falls in the range 111-125% results above the MDL are qualified as estimated "J", and non-detects should not be qualified. If the ICV %R is >125% results above the MDL are qualified as estimated "J", and non-detects are qualified "R". If the ICV %R is > 160% all results above the MDL are rejected "R".

3. **Continuing Calibration Verification Procedures.** Were CCV Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (*Must be calibrated every 2 hours. Acceptance criteria 70-130 %R for Antimony, Lead, and Thallium, 80-120 %R for Mercury, and 90-110% recovery for all other metals*).

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the ICV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the CCV %R falls in the range 75-89% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the CCV %R falls in the range 111-125% results above the MDL are qualified as estimated "J", and non-detects should not be qualified. If the CCV %R is >125% results above the MDL are qualified as estimated "J", and non-detects are qualified "R". If the CCV %R is > 160% all results above the MDL limit are rejected "R".

4. **Blank Sample Analysis (Equipment, Field, Method).** Were target Metals identified in any Blank? **(Y)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank	Aluminum	18.2 mg/L	4418-052103-1115	91 mg/L
Prep Batch 3147124	Barium	0.19 mg/L	4418-052103-1150	0.95 mg/L
	Calcium	27.1 mg/L	4418-052103-1205	135.5 mg/L
	Iron	8.6 mg/L		86.0 mg/L
	Magnesium	5.8 mg/L		29.0 mg/L
	Manganese	0.76 mg/L		3.8 mg/L
	Potassium	15.9 mg/L		79.5 mg/L

Method Blank Prep Batch 3147218	None			

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the target analytes.

NOTE : Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

5. **Laboratory Control Samples (LCS). .** Were percent recoveries outside acceptance criteria in either the LCS or LCSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

(Serves to monitor the overall performance of each step during the analysis, including the sample preparation. All aqueous LCS %R's must fall within the control limits of 80-120%, except for Antimony and Silver which have no fixed control limits.)

LCS ID	Target Analyte	%R	Associated Project Samples	Action

Action: For an aqueous LCS if the %R is 50-79%, qualify results ³MDL as "J" and non-detects as "UJ". If the %R is >120%, qualify results ³MDL as "J" and non-detects should not be qualified. If the %R is <50%, qualify results ³MDL as "J" and non-detects as "R". If the %R is >150%, qualify all results as "R". For the soil LCS, if the %R is > the upper limit qualify results ³MDL as "J" and non-detects should not be qualified. If the %R is < the lower limit qualify results ³MDL as "J" and non-detects as "UJ".

6. **Duplicate Sample Analysis.** Were the calculated % RPD values within the acceptance criteria (20%) for all target analytes greater than **5X** the MDL? **No duplicate samples taken**

Sample ID	Target Analyte	RPD	Associated Samples	Recommendation
				Qualify results greater than the MDL as estimated "J", and non-detects as estimated "UJ".

Action: Analytes with RPDs greater than 20% should be qualified "J" and non-detects qualified "UJ".

7. **Contract Required Detection Limit (CRDL) Standard:** Were target anlayte reporting limits (RL) below the CRDL? **(Y)** *(if NO, list target analyte, RL, CRDL and indicate reason why the RL was > the CRDL, e.g. dilution for high target compound detection)*

Sample ID	Target Analyte	RL	CRDL	Reason why the RL was > the CRDL

8. **Interference Check Standard (ICS):** Were all ICS recoveries +/- 20% of the true value? **(Y)** (if NO, list ICS, target analyte(s), %R and affected samples)

ICS ID	Target Analyte	%R	Affected Samples

Action: Reported Results above the RL for samples analyzed after an ICS with analytes that are outside these limits should be flagged "J" as estimated

9. **Spiked Sample Analysis.** Were percent recoveries outside acceptance criteria in either the MS/MSD? **(Y)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples

Lot 3E22173 Prep Batch 3147124	Aluminum Antimony Calcium Iron Magnesium Manganese	75-125 75-125 75-125 75-125 75-125 75-125	NC,MSB/NC,MSB 73 NC,MSB/NC,MSB NC,MSB/NC,MSB NC,MSB/NC,MSB NC,MSB/NC,MSB	631S-052103-MS 631S-052103-MSD
Lot 3E22173 Prep Batch 3147128	None			

Action: If the MS %R is <30%, results > the MDL are qualified as "J" and non-detects as "R. If the MS %R is 30-74%, results > the MDL are qualified as "J" and non-detects as "UJ. If the MS %R is >125%, results > the MDL are qualified as "J" and non-detects should not be qualified. If the MS/MSD is from a project sample apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

10. **Serial Dilution %D:** Were the calculated % D values within the acceptance criteria (10%) for all target analytes greater than **50X** the MDL? **The serial dilution was performed on a different client's sample from the same QC batch.**

Sample ID	Target Analyte	Serial Dilution (% D)	Associated Samples	Recommendation
				Qualify results greater than the MDL as estimated "J", and non-detects as estimated "UJ".

Action: For serial dilution %D results >10%, qualify results > the MDL as "J" and non-detects as "UJ".

F. GENERAL CHEMISTRY

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)** *(if NO, list non-compliant samples)*

Non Compliant Samples

Sample ID	Target Analyte	Holding Time Required	Holding Time Achieved	Action Required

Action: If aqueous CN sample pH <14, positive results are estimated "J" and non-detects qualified "R". If held > 14days, positive results are qualified "J", and non-detects are qualified "R".

2. **Initial Calibration Verification (ICV) Procedures.** Were ICV Procedures met? **No initial calibration procedures taken.**

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the ICV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the ICV %R falls in the range 75-80% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the ICV %R is >125% results above the MDL are qualified as estimated "J". If the ICV %R is > 150% all results are rejected "R".

3. **Continuing Calibration Verification Procedures.** Were CCV Procedures met? **No continuing calibration procedures taken.**

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the CCV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the CCV %R falls in the range 75-80% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the CCV %R is >125% results above the MDL are qualified as estimated "J", and non-detects are qualified "R". If the CCV %R is > 150% all results above the MDL are rejected "R".

4. **Blank Sample Analysis (Equipment, Field, Method).** Were target Metals identified in any Blank? **(Y)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Field Blank 631S-052103-FD	Percent Solids	87.8%	631S-052103-0815	439%
Method Blank Prep Batch 3147193 Prep Batch 3143386 Prep Batch 3143388	None			

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 5 times (5X) the amount in any blank for the target analytes.

NOTE : Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

5. **Laboratory Control Samples (LCS).** Were percent recoveries outside acceptance criteria in either the LCS or LCSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)* (Serves to monitor the overall performance of the analysis, including the sample preparation. All LCS %R must fall within the control limits of 80-120%.)

LCS ID	Target Analyte	%R	Associated Project Samples	Action

Action: If the %R is 50-79%, qualify results ³MDL as "J" and non-detects as "UJ". If the %R is >120%, qualify results ³MDL as "J" and non-detects should not be qualified. If the %R is <50%, qualify results ³MDL as "J" and non-detects as "R". If the %R is >150%, qualify all results as "R".

6. **Matrix Spike Samples:** Were percent recoveries outside acceptance criteria in either the MS or MSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*Evaluates the effect of the sample matrix on the accuracy of the analyte analysis.

MS/MSD ID	Target Analyte	%R	Associated Project Samples	Action

Action: If the MS %R is <30%, results > the MDL are qualified as "J" and non-detects as "UJ. If the MS %R is 30-74%, results > the MDL are qualified as "J" and non-detects as "UJ. If the MS %R is >125% results, > the MDL are qualified as "J" and non-detects should not be qualified. If the MS/MSD is from a project sample apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

7. Sample Duplicate: Were the calculated % RPD values within the acceptance criteria (20%) for all target analytes greater than **5X** the MDL? **(Y)** *(if NO, list target analyte, RPD and affected samples)*

Sample ID	Target Analyte	RPD	Associated Samples	Recommendation
				Qualify results greater than the MDL as estimated "J", and non-detects as estimated "UJ".

Action: Analytes with RPDs greater than 20% for values greater than 5X the RL should be qualified "J" and non-detects "UJ".

49017-026 - SDG#: 3E23139

A. SAMPLE RECIEPT/ CHAIN OF CUSTODY

1. Samples were collected on May 22 and 23, 2003 and received at the laboratory on May 23 and 24, 2003.
Sample coolers were received at temperatures ranging from 0.3 to 4.8°C, with wet ice present.

Parameter	Analytical Method	Holding Time Criteria
Cyanide, Total	SW846 9012A	14 Days
Mercury in Solid Waste (Manual Cold-Vapor)	SW846 7471A	28 Days
Polychlorinated Biphenyls	SW846 8082	7 Day Ext. Soil/ 14 Day Ext. AQ/ 40 Day Post Ext.
Semi-volatile Organic Compounds by GC/MS	SW846 8270C	7 Days Ext./40 Days Post Ext.
Total Residue as Percent Solids	MCAWW 160.3 MOD	7 Days
Trace Inductively Coupled Plasma Metals	SW846 6010B	6 Months
Volatile Organic Compounds by GC/MS	SW846 8260B	14 Days

List all project samples in table below. *Identify field QC samples and potential problem samples.*

Lab ID	Sample ID	Matrix	Comments
A3E230139	**631S-052203-EB**	AQ	Equipment Blank
	631S-052203-TB	AQ	Trip Blank
A3E230143	**601D-052203-0950**	AQ	
	601D-052203-TB	AQ	Trip Blank
	4602-052203-1200	AQ	
	623D-052203-1330	AQ	
	623S-052203-1550	AQ	
A3E230148	**636S-052203-1105**	S	
	636S-052203-1140	S	
	636S-052203-1155	S	
	636S-052203-TB	AQ	Trip Blank
	633S-052203-1545	S	
	633S-052203-1635	S	
	633S-052203-FD	S	Field Duplicate (633S-052203-1655)
	633S-052203-1655	S	
A3E240147	**634S-052303-TB**	AQ	Trip Blank
	634S-052303-0850	S	
	634S-052303-FD	S	Field Duplicate (634S-052303-0920)
	634S-052303-0920	S	
	634S-052303-0940	S	
	604D-052303-0945	AQ	

2. Case Narrative Issues & Miscellaneous Comments.
VOCs- An LCS/LCSD was provided for batch 3149533 since there was insufficient sample volume to perform and MS/MSD. An LCS/LCSD was provided for batch 3150294. The batch MS/MSD was not reported due to instrument failure. Surrogate recoveries were outside criteria for samples 634S-052303-0940 and 636S-052203-1140. Due to insufficient sample volume, re-preparation and reanalysis could not occur.

SVOCs - This value "#" represents a probable combination of 3-Methylphenol and 4-Methylphenol.
Batch 3143363 contained more than one type of analyte lists. A separate batch 3143364 had to be created due to reporting limitations and is associated with the original batch.

Metals – Some reporting limits are lower than our standard reporting limits (SRL) but are supported by the laboratory's MDL and/or IDLs; however, there are no standards in the calibration curve low enough to support these value(s). The continuing calibration blanks and method blanks may not support the lower RL.

B. VOCs (EPA Method 8260B)

Sample ID.	Inst.	Date	Time	Comments
631S-052203-EB	7	5/29	04:35	EB-ND
631S-052203-TB	7	5/29	04:57	TB-2-Butanone 1.2 ppb
601D-052203-0950	7	5/29	10:32	
601D-052203-TB	7	5/29	10:53	TB-Acetone 2.1 ppb, 2-Butanone 1.0 ppb
4602-052203-1200	7	5/29	11:15	
623D-052203-1330	7	5/29	13:07	
623S-052203-1550	7	5/29	11:59	
636S-052203-1105	12	5/29	15:27	
636S-052203-1140	12	5/29	15:50	
636S-052203-1155	12	5/29	16:12	
636S-052203-TB	7	5/29	21:05	TB-Acetone 2.7 ppb, 2-Butanone 0.88 ppb
633S-052203-1545	12	5/29	16:35	
633S-052203-1635	12	5/29	16:58	
633S-052203-FD	12	5/29	17:20	FD
633S-052203-1655	12	5/29	17:43	
634S-052303-TB	12	6/4	02:58	TB-Acetone 1.2 ppb, 2-Butanone 0.90 ppb
634S-052303-0850	12	5/29	18:06	
634S-052303-FD	12	5/29	18:28	FD
634S-052303-0920	12	5/29	18:51	
634S-052303-0940	12	5/29	19:13	
604D-052303-0945	12	6/4	03:20	

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)**

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: If holding times were not met, positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

2. **GC/MS Instrument Performance Check.** GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. **(Y)**

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: Refer to the Functional Guidelines for Organic Data Review, pages 10-11 for specific actions.

3. **Initial Calibration Procedures.** Were Initial Calibration Procedures met? **(N)**

Inst.	Date/ Time	Target Analyte, %RSD	Associated Samples	Corrective Action
7	5/27 11:46	Trichloroethene, 32.318	**631S-052203-EB** **631S-052203-TB** **601D-052203-0950** **601D-052203-TB** **4602-052203-1200** **623D-052203-1330** **623S-052203-1550** **636S-052203-TB**	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
12	5/27 19:00	None		
12	6/3 20:46	None		

4. **Continuing Calibration Procedures.** Were Continuing Calibration Procedures met? **(N)** *(if NO, list non-compliant instrument, target analytes and affected samples)*. (Percent Drift (%D) must be less than or equal to 25%)

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
7	5/28 20:35	Acetone, -33.6	**631S-052203-EB** **631S-052203-TB** **601D-052203-0950** **601D-052203-TB** **4602-052203-1200** **623D-052203-1330** **623S-052203-1550**	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
7	5/29 07:56	Acetone, -31.8	**601D-052203-0950** **601D-052203-TB** **4602-052203-1200** **623D-052203-1330** **623S-052203-1550**	
7	5/29 19:16	Acetone, -25.8	**636S-052203-TB**	
12	5/29 13:50	1,2-Dibromo-3-chloropropane, 31.9 Bromoform, 32.3	**636S-052203-1105** **636S-052203-1140** **636S-052203-1155** **633S-052203-1545** **633S-052203-1635** **633S-052203-FD** **633S-052203-1655** **634S-052303-0850** **634S-052303-FD** **634S-052303-0920** **634S-052303-0940**	
12	6/3 22:04	1,2,4-Trichlorobenzene, -38.6	**634S-052303-TB** **604D-052303-0945**	

5. **Blank Sample Analysis (Trip, Equipment, Field, Method).** Were target VOCs identified in any Blank? **(Y)** *(if YES, list type of blank, target analyte concentration and affected samples.)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Trip Blank 0613S-052203-TB	2-Butanone	1.2 µg/L	**631S-052203-EB**	12.0 µg/L
Trip Blank 601D-052203-TB	Acetone 2-Butanone	2.1 µg/L 1.0 µg/L	**601D-052203-0950** **4602-052203-1200** **623D-052203-1330**	21.0 µg/L 10.0 µg/L

			623S-052203-1550	
Trip Blank 636S-052203-TB	Acetone 2-Butanone	2.7 µg/L 0.88 µg/L	**636S-052203-1105** **636S-052203-1140** **636S-052203-1155** **633S-052203-1545** **633S-052203-1635** **633S-052203-FD** **633S-052203-1655**	27.0 µg/L 8.8 µg/L
Trip Blank 634S-052303-TB	Acetone 2-Butanone	1.2 µg/L 0.9 µg/L	**634S-052303-0850** **634S-052303-FD** **634S-052303-0920** **634S-052303-0940** **604D-052303-0945**	12.0 µg/L 9.0 µg/L
Method Blank, I-7 5/28/03, 22:02	1,2,4-Trichlorobenzene	0.79 µg/L	**631S-052203-EB** **631S-052203-TB** **601D-052203-0950** **601D-052203-TB** **4602-052203-1200** **623D-052203-1330** **623S-052203-1550**	3.95 µg/L
Method Blank, I-7 5/29/03, 09:24	1,2,4-Trichlorobenzene	0.82 µg/L	**601D-052203-0950** **601D-052203-TB** **4602-052203-1200** **623D-052203-1330** **623S-052203-1550**	4.1 µg/L
Method Blank, I-7 5/29/03, 20:43	1,2,4-Trichlorobenzene	0.59 µg/L	**636S-052203-TB**	2.95 µg/L
Method Blank, I-12 , 5/29/03, 15:04	Acetone	56 µg/kg	**636S-052203-1105** **636S-052203-1140** **636S-052203-1155** **633S-052203-1545** **633S-052203-1635** **633S-052203-FD** **633S-052203-1655** **634S-052303-0850** **634S-052303-FD** **634S-052303-0920** **634S-052303-0940**	560.0 µg/kg
Method Blank, I-12, 6/3/03, 23:12	1,2-Dibromo-3-chloroproane 1,2,4-Trichlorobenzene	1.1 µg/L 1.8 µg/L	**634S-052303-TB** **604D-052303-0945**	5.5 µg/L 18.0 µg/L

<u>Action:</u> In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the common laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane), or 5 times (5X) the amount for other target compounds.

NOTE :Trip blank associated samples include all samples shipped within the same sample cooler. Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

6. System Monitoring Compounds Recoveries. Were surrogate compound recoveries outside acceptance criteria specified by the laboratory? **(N)**

Surrogate Percent Recovery Criteria			
Surrogate		**Aqueous Matrix**	**Solid Matrix**
Dibromofluoromethane	SRG01	73-122	59-138
1,2-Dichloroethane-d4	SRG02	61-128	61-130

Toluene-d8	SRG03	76-110	60-143
4-Bromofluorobenzene	SRG04	74-116	47-158

Project Sample ID	SRG01 %R	SRG02 %R	SRG03 %R	SRG04 %R
636S-052203-1140	56	59		
634S-052303-0920	56			

Action: If the surrogate percent recovery is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the surrogate percent recovery is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "UJ". If the surrogate percent recovery is less than 10% associated target analyte positive results are qualified "J" and non-detects are qualified "R".

7. **Laboratory Control Samples (LCS), Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries.** Were percent recoveries outside acceptance criteria in either the LCS/LCSD or MS/MSD? **(Y)**

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
Lab MS/MSD	Benzene	78-118	73	None

Action: If the LCS %R is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the LCS %R is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "R". If the MS/MSD is from a project sample use the same rules as the LCS/LCSD and apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

8. **Internal Standard Recoveries.** Did the calculated response of each IS compound fall within the QA/QC criteria of +100% and –50% of the corresponding CCV standard? **(Y)**

Project Sample ID	Non-Compliant IS	% Recovery	Analytes Affected

Action: If the internal standard is greater than the upper limit, positive results for the associated target analytes are qualified "J" and non-detects should not be qualified. If the internal standard is less than the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "UJ". If the internal standard is less than 10% of the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "R".

9. **Duplicate Sample Analysis.** Were the calculated % RPD values within the acceptance criteria (50%) for all target analytes greater than **5X** the RL? **(Y)** *(if NO, list target analyte, RPD and affected samples)*

RPDs for Field Duplicates

Sample ID	Target Analyte	RPD	Associated Samples	Recommendation

C. SVOCs (EPA Method 8270C)

Sample ID.	Inst.	Date Extracted	Date Analyzed	Time	Comments
631S-052203-EB	7	5/23	5/29	15:00	EB-bis(2-Ethylhexyl)phthalate 9.8 ppb
636S-052203-1105	8	5/23	5/25	20:09	
636S-052203-1140	8	5/23	5/25	17:15	
636S-052203-1155	8	5/23	5/25	19:11	
633S-052203-1545	8	5/23	5/25	19:40	
633S-052203-1635	8	5/23	5/25	17:44	
633S-052203-FD	8	5/23	5/25	18:13	FD

633S-052203-1655	8	5/23	5/25	18:42	
634S-052303-0850	6	5/24	6/4	15:03	
634S-052303-FD	6	5/24	6/4	14:35	FD
634S-052303-0920	6	5/24	6/3	18:03	
634S-052303-0940	6	5/24	6/3	17:34	"E" qualifier – 4-Methylphenol

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)**

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: If holding times were not met, positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

2. **GC/MS Instrument Performance Check.** GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. **(Y)** *(if NO, list non compliant instrument/affected samples)*

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: Refer to the Functional Guidelines for Organic Data Review, pages 49-50 for specific actions.

3. **Initial Calibration Procedures.** Were Initial Calibration Procedures met? **(N)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (Percent Relative Standard Deviation (%RSD) must be less than or equal to 30%)

Inst.	Date/ Time	Target Analyte, %RSD	Associated Samples	Corrective Action
6	5/27 06:26	None		Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
6	6/4 11:53	None		
7	5/26 06:44	None		
8	5/19 14:30	Hexachlorocyclopentadiene, 30.808	**636S-052203-1105** **636S-052203-1140** **636S-052203-1155** **633S-052203-1545** **633S-052203-1635** **633S-052203-FD** **633S-052203-1655**	

4. **Continuing Calibration Procedures.** Were Continuing Calibration Procedures met? **(N)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (Percent Drift (%D) must be less than or equal to 25%)

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
6	5/28 07:14	None		Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
6	4/3 08:04	None		

6	6/4 11:43	None		
7	5/28 09:02	None		
7	5/29 12:30	Hexachlorocyclopentadiene, -27.6 2,4-Dinitrophenol, 32.6 2,4-Dinitro-2-methylphenol, -30.4	**631S-052203-EB**	
8	5/25 14:20	Pyrene, -27.2	**636S-052203-1105** **636S-052203-1140** **636S-052203-1155** **633S-052203-1545** **633S-052203-1635** **633S-052203-FD** **633S-052203-1655**	

5. **Blank Sample Analysis (Trip, Equipment, Field, Method).** Were target SVOCs identified in any Blank? **(Y)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Equipment Blank 631S-052203-EB	Bis (2-Ethylhexyl) phthalate	9.8 µg/L	**636S-052203-1105** **636S-052203-1140** **636S-052203-1155** **633S-052203-1545** **633S-052203-1635** **633S-052203-FD** **633S-052203-1655** **634S-052303-0850** **634S-052303-FD** **634S-052303-0920** **634S-052303-0940**	98.0 µg/L
Method Blank, I-8 5/24/03, 15:49	None			
Method Blank, I-7 5/28/03, 10:31	None			
Method Blank, I-6 5/28/03, 08:13	None			

<u>Action:</u> In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the common laboratory contaminants (phthalate esters), or 5 times (5X) the amount for other target compounds.

6. **System Monitoring Compounds Recoveries.** Were surrogate compound recoveries outside acceptance criteria specified by the laboratory? **(Y)** *(if YES, indicate surrogate recovery criteria, project sample ID and %R)*

Surrogate Percent Recovery Criteria			
Surrogate		**Aqueous Matrix**	**Solid Matrix**
Nitrobenzene-d5	SRG01	32-112	42-110
2-Fluorobiphenyl	SRG02	30-110	43-110
Terphenyl-d14	SRG03	10-144	37-137
Phenol-d5	SRG04	10-113	25-115
2-Fluorophenol	SRG05	13-110	11-116
2,4,6-Tribromophenol	SRG06	21-122	35-116

Project Sample ID	SRG01 %R	SRG02 %R	SRG03 %R	SRG04 %R	SRG05 %R	SRG06 %R
634S-052303-0850	**0.0D**	51D	58D	50D	54D	**0.0D**

Action: If the surrogate percent recovery is greater than the upper acceptance limit associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the surrogate percent recovery is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "UJ". If the surrogate percent recovery is less than 10% associated target analyte positive results are qualified "J" and non-detects are qualified "R".

7. **Laboratory Control Samples (LCS), Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries.** Were percent recoveries outside acceptance criteria in either the LCS/LCSD or MS/MSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
		[Insert %R Range]		
		[Insert %R Range]		

Action: If the LCS %R is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the LCS %R is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "R". If the MS/MSD is from a project sample use the same rules as the LCS/LCSD and apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

8. **Internal Standard Recoveries.** Did the calculated response of each IS compound fall within the QA/QC criteria of +100% and –50% of the corresponding CCV standard? **(Y)** *(if NO, indicate project sample, non-compliant IS, %R, analytes affected-obtain from laboratory SOP)*

Project Sample ID	Non-Compliant IS	% Recovery	Analytes Affected

Action: If the internal standard is greater than the upper limit, positive results for the associated target analytes are qualified "J" and non-detects should not be qualified. If the internal standard is less than the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "UJ". If the internal standard is less than 10% of the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "R".

D. PCBs (EPA Method 8082)

Sample ID.	Inst.	Date Extracted	Date Analyzed	Time	Comments
631S-052203-EB	4	5/23	5/28	08:46	EB-ND
636S-052203-1105	4	5/23	5/28	09:53	
636S-052203-1140	4	5/23	5/28	10:10	
636S-052203-1155	4	5/23	5/28	10:27	
633S-052203-1545	4	5/23	5/28	10:44	
633S-052203-1635	4	5/23	5/28	11:01	
633S-052203-FD	4	5/23	5/28	11:18	FD
633S-052203-1655	4	5/23	5/28	14:21	
634S-052303-0850	4	5/24	5/31	10:18	
634S-052303-FD	4	5/24	5/31	11:09	FD
634S-052303-0920	4	5/24	5/31	11:26	
634S-052303-0940	4	5/24	5/31	11:43	

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)** *(if NO, list non-compliant samples)*

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: If holding times were not met, positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

2. **Initial Calibration Procedures.** Were Initial Calibration Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples)*. (Percent Relative Standard Deviation (%RSD) must be less than or equal to 20%. Two single component peaks may exceed 20%, but must be less than or equal to 30%)

Inst.	Date/ Time	Target Analyte, %RSD	Associated Samples	Corrective Action
4	5/28 08:03	None		Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.

3. **Continuing Calibration Procedures.** Were Continuing Calibration Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples)*. (Percent Drift (%D) must be less than or equal to 20%)

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
4	5/27 3:37	None		Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.
4	5/28 06:48	None		
4	5/28 11:35	None		
4	5/28 18:35	None		
4	5/31 10:01	None		
4	5/31 15:39	None		

4. **Blank Sample Analysis (Trip, Equipment, Field, Method).** Were target Aroclors identified in any Blank? **(N)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 5 times (5X) the amount in any blank.

NOTE : Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

5. **System Monitoring Compounds Recoveries.** Were surrogate compound recoveries (Tetrachloro-m-xylene and Decachlorobiphenyl) outside acceptance criteria of 30-150% R? **(N)** *(if YES, indicate surrogate recovery criteria, project sample ID and %R)*

Project Sample ID	SRG01 %R	SRG02 %R	Corrective Action

Action: If the surrogate percent recovery is greater than the upper acceptance limit associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the surrogate percent recovery is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "UJ". If the surrogate percent recovery is less than 10% associated target analyte positive results are qualified "J" and non-detects are qualified "R".

6. **Laboratory Control Samples (LCS), Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries.** Were percent recoveries outside acceptance criteria in either the LCS/LCSD or MS/MSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
		[Insert %R Range]		
		[Insert %R Range]		

Action: If the LCS %R is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the LCS %R is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "R". If the MS/MSD is from a project sample use the same rules as the LCS/LCSD and apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

E. METALS (SW846 6010B, ICP-AES)

Sample ID.	Prep Batch	Date	Time	Comments
631S-052203-EB	3147118	5/27	15:12	EB- Ba 0.0014 mg/L, Ca 0.59 mg/L, Cu 0.0057 mg/L, Mg 0.15 mg/L, Mn 0.0026 mg/L, K 0.28 mg/L

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)** *(if NO, list non-compliant samples)*

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: If aqueous sample pH ³2, positive results are qualified "J", estimated and non-detected analytes as "R", rejected. If held > 180 days, positive results are qualified "J", estimated and non-detected analytes as "R", rejected

2. **Initial Calibration Verification (ICV) Procedures.** Were ICV Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (*Must be calibrated once every 24 hours. Acceptance criteria 70-130 %R for Antimony, Lead, and Thallium, 80-120 %R for Mercury and 90-110% R for all other metals*).

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the ICV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the ICV %R falls in the range 75-89% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the ICV %R falls in the range 111-125% results above the MDL are qualified as estimated "J", and non-detects should not be qualified. If the ICV %R is >125% results above the MDL are qualified as estimated "J", and non-detects are qualified "R". If the ICV %R is > 160% all results above the MDL are rejected "R".

3. **Continuing Calibration Verification Procedures.** Were CCV Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (*Must be calibrated every 2 hours. Acceptance criteria 70-130 %R for Antimony, Lead, and Thallium, 80-120 %R for Mercury, and 90-110% recovery for all other metals*).

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the ICV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the CCV %R falls in the range 75-89% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the CCV %R falls in the range 111-125% results above the MDL are qualified as estimated "J", and non-detects should not be qualified. If the CCV %R is >125% results above the MDL are qualified as estimated "J", and non-detects are qualified "R". If the CCV %R is > 160% all results above the MDL limit are rejected "R".

4. **Blank Sample Analysis (Equipment, Field, Method).** Were target Metals identified in any Blank? **(Y)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Equipment Blank 631S-052203-EB	Barium Calcium Copper Magnesium Manganese Potassium	0.0014 mg/L 0.59 mg/L 0.0057 mg/l 0.15 mg/L 0.0026 mg/L 0.28 mg/L	None	0.014 mg/L 5.9 mg/L 0.057 mg/l 1.5 mg/L 0.026 mg/L 2.8 mg/L
Method Blank Prep Batch 3147118	Calcium Magnesium Manganese Potassium	0.34 mg/L 0.089 mg/L 0.00099 mg/L 0.26 mg/L	**631S-052203-EB**	34.0 mg/L 0.89 mg/L 0.0099 mg/L 2.6 mg/L

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the target analytes.

NOTE : Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

5. **Laboratory Control Samples (LCS).** Were percent recoveries outside acceptance criteria in either the LCS or LCSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

(Serves to monitor the overall performance of each step during the analysis, including the sample preparation. All aqueous LCS %R's must fall within the control limits of 80-120%, except for Antimony and Silver which have no fixed control limits.)

LCS ID	Target Analyte	%R	Associated Project Samples	Action

Action: For an aqueous LCS if the %R is 50-79%, qualify results ³MDL as "J" and non-detects as "UJ". If the %R is >120%, qualify results ³MDL as "J" and non-detects should not be qualified. If the %R is <50%, qualify results ³MDL as "J" and non-detects as "R". If the %R is >150%, qualify all results as "R". For the soil LCS, if the %R is > the upper limit qualify results ³MDL as "J" and non-detects should not be qualified. If the %R is < the lower limit qualify results ³MDL as "J" and non-detects as "UJ".

6. **Duplicate Sample Analysis.** Were the calculated % RPD values within the acceptance criteria (20%) for all target analytes greater than **5X** the MDL? **(Y)** *(if NO, list target analyte, RPD and affected samples)*

Sample ID	Target Analyte	RPD	Associated Samples	Recommendation
				Report average values

Action: Analytes with RPDs greater than 20% should be qualified "J" and non-detects qualified "UJ".

7. **Contract Required Detection Limit (CRDL) Standard:** Were target anlayte reporting limits (RL) below the CRDL? **(Y)** *(if NO, list target analyte, RL, CRDL and indicate reason why the RL was > the CRDL, e.g. dilution for high target compound detection)*

Sample ID	Target Analyte	RL	CRDL	Reason why the RL was > the CRDL

8. **Interference Check Standard (ICS):** Were all ICS recoveries +/- 20% of the true value? **(Y)** (if NO, list ICS, target analyte(s), %R and affected samples)

ICS ID	Target Analyte	%R	Affected Samples

Action: Reported Results above the RL for samples analyzed after an ICS with analytes that are outside these limits should be flagged "J" as estimated

9. **Spiked Sample Analysis.** Were percent recoveries outside acceptance criteria in either the MS/MSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples

Action: If the MS %R is <30%, results > the MDL are qualified as "J" and non-detects as "R. If the MS %R is 30-74%, results > the MDL are qualified as "J" and non-detects as "UJ. If the MS %R is >125%, results > the MDL are qualified as "J" and non-detects should not be qualified. If the MS/MSD is from a project sample apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

10. **Serial Dilution %D:** Were the calculated % D values within the acceptance criteria (10%) for all target analytes greater than **50X** the MDL? **(Y)** *(if NO, list target analyte, %D and affected samples)*

Sample ID	Target Analyte	Serial Dilution (% D)	Associated Samples	Recommendation
				Qualify results greater than the MDL as estimated "J", and non-detects as estimated "UJ".

Action: For serial dilution %D results >10%, qualify results > the MDL as "J" and non-detects as "UJ".

F. GENERAL CHEMISTRY

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)** *(if NO, list non-compliant samples)*

Non Compliant Samples

Sample ID	Target Analyte	Holding Time Required	Holding Time Achieved	Action Required

Action: If aqueous CN sample pH <14, positive results are estimated "J" and non-detects qualified "R". If held > 14days, positive results are qualified "J", and non-detects are qualified "R".

2. **Initial Calibration Verification (ICV) Procedures.** Were ICV Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples)*. (*Must be calibrated once every 24 hours. Acceptance criteria 70-130 %R for Antimony, Lead, and Thallium, 80-120 %R for Mercury and 90-110% R for all other metals*).

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the ICV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the ICV %R falls in the range 75-80% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the ICV %R is >125% results above the MDL are qualified as estimated "J". If the ICV %R is > 150% all results are rejected "R".

3. **Continuing Calibration Verification Procedures.** Were CCV Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples)*. (*Must be calibrated every 2 hours. Acceptance criteria 70-130 %R for Antimony, Lead, and Thallium, 80-120 %R for Mercury, and 90-110% recovery for all other metals*).

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the CCV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the CCV %R falls in the range 75-80% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the CCV %R is >125% results above the MDL are qualified as estimated "J", and non-detects are qualified "R". If the CCV %R is > 150% all results above the MDL are rejected "R".

4. **Blank Sample Analysis (Equipment, Field, Method).** Were target Metals identified in any Blank? **(N)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
	None			

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 5 times (5X) the amount in any blank for the target analytes.

NOTE : Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

5. **Laboratory Control Samples (LCS).** Were percent recoveries outside acceptance criteria in either the LCS or LCSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)* (Serves to monitor the overall performance of the analysis, including the sample preparation. All LCS %R must fall within the control limits of 80-120%.)

LCS ID	Target Analyte	%R	Associated Project Samples	Action

Action: If the %R is 50-79%, qualify results ³MDL as "J" and non-detects as "UJ". If the %R is >120%, qualify results ³MDL as "J" and non-detects should not be qualified. If the %R is <50%, qualify results ³MDL as "J" and non-detects as "R". If the %R is >150%, qualify all results as "R".

6. **Matrix Spike Samples:** Were percent recoveries outside acceptance criteria in either the MS or MSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*Evaluates the effect of the sample matrix on the accuracy of the analyte analysis.

MS/MSD ID	Target Analyte	%R	Associated Project Samples	Action

Action: If the MS %R is <30%, results > the MDL are qualified as "J" and non-detects as "UJ. If the MS %R is 30-74%, results > the MDL are qualified as "J" and non-detects as "UJ. If the MS %R is >125% results, > the MDL are qualified as "J" and non-detects should not be qualified. If the MS/MSD is from a project sample apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

7. **Sample Duplicate:** Were the calculated % RPD values within the acceptance criteria (20%) for all target analytes greater than **5X** the MDL? **(Y)** *(if NO, list target analyte, RPD and affected samples)*

Sample ID	Target Analyte	RPD	Associated Samples	Recommendation
				Qualify results greater than the MDL as estimated "J", and non-detects as estimated "UJ".

Action: Analytes with RPDs greater than 20% for values greater than 5X the RL should be qualified "J" and non-detects "UJ".

49017-026 - SDG#: 3E29261

A. SAMPLE RECIEPT/ CHAIN OF CUSTODY

1. Samples were collected on May 28 and May 29, 2003 and received at the laboratory on May 29 and May 30, 2003
Sample cooler was (were) received at temperature(s) of 4.9°C, 2.2°C and 3.6°C, with wet ice present.

Parameter	Analytical Method	Holding Time Criteria
Polychlorinated Biphenyls	SW846 8082	7 Days Ext./40 Days Post Ext.
Semi-volatile Organic Compounds by GC/MS	SW846 8270C	7 Days Ext./40 Days Post Ext.
Total Residue as Percent Solids	MCAWW 160.3 MOD	7 Days
Trace Inductively Coupled Plasma Metals	SW846 6010B	6 months
Volatile Organic Compounds by GC/MS	SW846 8260B	14 Days

List all project samples in table below. *Identify field QC samples and potential problem samples.*

Lab ID	Sample ID	Matrix	Comments
A3E290261	**629D-052803-1140**	SO	
	629D-052803-1200	SO	
	629D-052803-1225	SO	
	629D-052803-TB	AQ	TRIP BLANK
A3E290267	**4119-052803-TB**	AQ	TRIP BLANK
	4119-052803-0940	AQ	
	6105-052803-1210	AQ	
A3E300194	**610D-052903-1520**	AQ	
	610D-052903-TB	AQ	TRIP BLANK
	4610-052903-1655	AQ	
	4610-052903-FD	AQ	FIELD BLANK
	4118-052903-1900	AQ	
	4117-052903-1840	AQ	
A3E300197	**4009-052903-1110**	SO	
	4009-052903-1150	SO	
	4009-052903-TB	AQ	TRIP BLANK
	632S-052903-1710	SO	
	632S-052903-1730	SO	
	632S-052903-1800	SO	

2. Case Narrative Issues & Miscellaneous Comments.
VOC's – An LCS/LCSD was provided for batch 3161279. The batch MS/MSD was not reported because the associated environmental sample required reanalysis at a different dilution. Surrogate recoveries were outside criteria for sample 632S-052903-1730. Due to insufficient sample volume, re-preparation and reanalysis could not occur.
SVOC's – Sample 632S-052903-1710 had elevated reporting limits due to sample matrix.

B. VOCs (EPA Method 8260B)

Sample ID.	Inst.	Date	Time	Comments
629D-052803-1140	12	6/4/03	19:03	
629D-052803-1200	12	6/4/03	19:25	
629D-052803-1225	12	6/4/03	19:48	
629D-052803-TB	7	6/7/03	14:30	TB – Acetone 2.0 ppb, 2-Butanone 0.94 ppb
4119-052803-TB	12	6/6/03	13:17	TB – Acetone 1.7 ppb, 2-Butanone 1.1 ppb
4119-052803-0940	12	6/6/03	13:39	
6105-052803-1210	12	6/6/03	14:02	

610D-052903-1520	10	6/7/03	13:04	
610D-052903-TB	10	6/7/03	13:30	TB – Acetone 3.5 ppb, 2-Butanone 1.3 ppb
4610-052903-1655	10	6/9/03	13:40	
4610-052903-FD	10	6/7/03	19:49	FD – Acetone 7.7 ppb, Bromomethane 2.4 ppb, Vinyl Chloride 140 ppb
4118-052903-1900	10	6/9/03	11:31	
4117-052903-1840	10	6/7/03	20:41	
4009-052903-1110	12	6/4/03	22:02	
4009-052903-1150	12	6/7/03	22:21	
4009-052903-TB	10	6/7/03	13:56	TB – Acetone 3.2 ppb, 2-Butanone 1.4 ppb
632S-052903-1710	12	6/4/03	22:47	
632S-052903-1730	12	6/4/03	23:10	
632S-052903-1800	12	6/4/03	23:32	

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)** *(if NO, list non-compliant samples)*

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: If holding times were not met, positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

2. **GC/MS Instrument Performance Check.** GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. **(Y)** *(if NO, list non compliant instrument/affected samples)*

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: Refer to the Functional Guidelines for Organic Data Review, pages 10-11 for specific actions.

3. **Initial Calibration Procedures.** Were Initial Calibration Procedures met? **(N)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (Percent Relative Standard Deviation (%RSD) must be less than or equal to 30%)

Inst.	Date/ Time	Target Analyte, %RSD	Associated Samples	Corrective Action
7	5/27/03 11:46	Trichloroethene, 32.318	629D-052803-TB	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
10	5/21/03 09:49	None		
12	6/3/03 20:46	None		

4. **Continuing Calibration Procedures.** Were Continuing Calibration Procedures met? **(N)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (Percent Drift (%D) must be less than or equal to 25%)

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
7	6/7/03 10:07	2-Hexanone, 36.8 Acetone, 39.4 2-Butanone, 29.1 1,2,4-Trichlorobenzene, 31.6	629D-052803-TB	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
10	6/7/03 02:47	None		

10	6/7/03 14:58	None		
10	6/9/03 08:57	Bromoform, 34.9	4610-052903-1655 4118-052903-1900	
12	6/4/03 14:21	Carbon Disulfide, 26.1 Acetone, 29.2 1,2,4-Trichlorobenzene, 53.2	629D-052803-1140 629D-052803-1200 629D-052803-1225 4009-052903-1110 632S-052903-1710 632S-052903-1730 632S-052903-1800	
12	6/6/03 09:09	Bromomethane, 26.7 1,2,4-Trichlorobenzene, 39.9	4119-052803-TB 4119-052803-0940 6105-052803-1210	
12	6/7/03 12:08	Bromomethane, 26.7 1,2,4-Trichlorobenzene, 37.6	4009-052903-1150	

5. **Blank Sample Analysis (Trip, Equipment, Field, Method).** Were target VOCs identified in any Blank? **(Y)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Trip Blank 629D-052803-TB	Acetone 2-Butanone	2.0 µg/L 0.94 µg/L	629D-052803-1140 629D-052803-1200 629D-052803-1225	20 µg/L 9.4 µg/L
Trip Blank 4119-052803-TB	Acetone 2-Butanone	1.7 µg/L 1.1 µg/L	4119-052803-0940 6105-052803-1210	17 µg/L 11 µg/L
Trip Blank 610D-052903-TB	Acetone 2-Butanone	3.5 µg/L 1.3 µg/L	610D-052903-1520 4610-052903-1655 4610-052903-FD 4118-052903-1900 4117-052903-1840	35 µg/L 13 µg/L
Field Blank 4610-052903-FD	Acetone Bromomethane Vinyl Chloride	7.7 µg/L 2.4 µg/L 140 µg/L	4610-052903-1655	77 µg/L 12.0 µg/L 700 µg/L
Trip Blank 4009-052903-TB	Acetone 2-Butanone	3.2 µg/L 1.4 µg/L	4009-052903-1110 4009-052903-1150 4009-052903-TB 632S-052903-1710 632S-052903-1730 632S-052903-1800	32 µg/L 14 µg/L
Method Blank, I7 6/7/03, 11:35	None			
Method Blank, I10 6/7/03, 04:30	Bromomethane	0.41 µg/L	4009-052903-TB	2.05 µg/L
Method Blank, I10 6/7/03, 16:41	Acetone Bromomethane	1.5 µg/L 0.44 µg/L	4610-052903-FD 4117-052903-1840	15 µg/L 2.20 µg/L
Method Blank, I10 6/9/03, 10:40	Bromomethane	0.51 µg/L	4610-052903-1655 4118-052903-1900	2.55 µg/L
Method Blank, I12 6/4/03, 21:40	Acetone 1,2,4-Trichlorobenzene	70 µg/L 29 µg/L	4009-052903-1110 4009-052903-1150 632S-052903-1710 632S-052903-1730 632S-052903-1800	700 µg/L 145 µg/L
Method Blank, I12 6/4/03, 18:40	Acetone 1,2,4-Trichlorobenzene	82 µg/L 31 µg/L	629D-052803-1140 629D-052803-1200 629D-052803-1225	820 µg/L 155 µg/L

Method Blank, I12 6/6/03, 10:39	None		4119-052803-TB 4119-052803-0940 6105-052803-1210	

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the common laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane), or 5 times (5X) the amount for other target compounds.

NOTE :Trip blank associated samples include all samples shipped within the same sample cooler. Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

6. **System Monitoring Compounds Recoveries.** Were surrogate compound recoveries outside acceptance criteria specified by the laboratory? **(Y)** *(if YES, indicate surrogate recovery criteria, project sample ID and %R)*

Surrogate Percent Recovery Criteria			
Surrogate		**Aqueous Matrix**	**Solid Matrix**
Dibromofluoromethane	SRG01		59-138
1,2-Dichloroethane-d4	SRG02		61-130
Toluene-d8	SRG03		60-143
4-Bromofluorobenzene	SRG04		47-158

Project Sample ID	SRG01 %R	SRG02 %R	SRG03 %R	SRG04 %R
4009-052903-1150	8.8D	3.2D	22D	25D
632S-052903-1730	54	58		

Action: If the surrogate percent recovery is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the surrogate percent recovery is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "UJ". If the surrogate percent recovery is less than 10% associated target analyte positive results are qualified "J" and non-detects are qualified "R".

7. **Laboratory Control Samples (LCS), Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries.** Were percent recoveries outside acceptance criteria in either the LCS/LCSD or MS/MSD? **(Y)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

Project Sample ID	Target Analyte	RPD Criteria	%RPD	Affected Samples
Lot A3E290261	1,1-Dichloroethene	27	30	629D-052803-1225
Prep Batch 3155507	Trichloroethene	23	38	
629D-052803-MS	Benzene	20	34	
629D-052803-MD	Toluene	24	33	
	Chlorobenzene	22	31	

Action: If the LCS %R is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the LCS %R is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "R". If the MS/MSD is from a project sample use the same rules as the LCS/LCSD and apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

8. **Internal Standard Recoveries.** Did the calculated response of each IS compound fall within the QA/QC criteria of +100% and –50% of the corresponding CCV standard? **(Y)** *(if NO, indicate project sample, non-compliant IS, %R, analytes affected-obtain from laboratory SOP)*

Project Sample ID	Non-Compliant IS	% Recovery	Analytes Affected
		[Insert %R]	
		[Insert %R]	

Action: If the internal standard is greater than the upper limit, positive results for the associated target analytes are qualified "J" and non-detects should not be qualified. If the internal standard is less than the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "UJ". If the internal standard is less than 10% of the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "R".

C. SVOCs (EPA Method 8270C)

Sample ID.	Inst.	Date Extracted	Date Analyzed	Time	Comments
4009-052903-1110	9	5/29/03	6/5/03	18:07	
4009-052903-1150	9	5/29/03	6/5/03	18:36	
632S-052903-1710	9	5/29/03	6/5/03	19:05	
632S-052903-1730	9	5/29/03	6/5/03	17:38	
632S-052903-1800	9	5/29/03	6/5/03	15:06	

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)** *(if NO, list non-compliant samples)*

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: If holding times were not met, positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

2. **GC/MS Instrument Performance Check.** GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. **(Y)** *(if NO, list non compliant instrument/affected samples)*

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: Refer to the Functional Guidelines for Organic Data Review, pages 49-50 for specific actions.

3. **Initial Calibration Procedures.** Were Initial Calibration Procedures met? **(N)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (Percent Relative Standard Deviation (%RSD) must be less than or equal to 30%)

Inst.	Date/ Time	Target Analyte, %RSD	Associated Samples	Corrective Action
9	6/2/03 14:24	None		Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
9	6/5/03 09:03	2,4 Dinitrophenol, 31.300	4009-052903-1110 4009-052903-1150 632S-052903-1710 632S-052903-1730 632S-052903-1800	

4. **Continuing Calibration Procedures.** Were Continuing Calibration Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (Percent Drift (%D) must be less than or equal to 25%)

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
9	6/2/03 14:00	None		Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
9	6/5/03 09:23	None		

9	6/6/03 13:10	None		

5. **Blank Sample Analysis (Trip, Equipment, Field, Method).** Were target SVOCs identified in any Blank? **(N)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank, I9 6/2/03, 14:30	None			

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the common laboratory contaminants (phthalate esters), or 5 times (5X) the amount for other target compounds.

6. **System Monitoring Compounds Recoveries.** Were surrogate compound recoveries outside acceptance criteria specified by the laboratory? **(N)** *(if YES, indicate surrogate recovery criteria, project sample ID and %R)*

Surrogate Percent Recovery Criteria			
Surrogate		**Aqueous Matrix**	**Solid Matrix**
Nitrobenzene-d5	SRG01		42-110
2-Fluorobiphenyl	SRG02		43-110
Terphenyl-d14	SRG03		37-137
Phenol-d5	SRG04		25-115
2-Fluorophenol	SRG05		11-116
2,4,6-Tribromophenol	SRG06		35-116

Project Sample ID	SRG01 %R	SRG02 %R	SRG03 %R	SRG04 %R	SRG05 %R	SRG06 %R
4009-052903-1150	86D	79D	92D	87D	85D	68D
632S-052903-1710	71D	72D	87D	79D	67D	673D

Action: If the surrogate percent recovery is greater than the upper acceptance limit associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the surrogate percent recovery is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "UJ". If the surrogate percent recovery is less than 10% associated target analyte positive results are qualified "J" and non-detects are qualified "R".

7. **Laboratory Control Samples (LCS), Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries.** Were percent recoveries outside acceptance criteria in either the LCS/LCSD or MS/MSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
		[Insert %R Range]		
		[Insert %R Range]		

Action: If the LCS %R is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the LCS %R is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "R". If the MS/MSD is from a project sample use the same rules as the LCS/LCSD and apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

8. **Internal Standard Recoveries.** Did the calculated response of each IS compound fall within the QA/QC criteria of +100% and –50% of the corresponding CCV standard? **(Y)** *(if NO, indicate project sample, non-compliant IS, %R, analytes affected-obtain from laboratory SOP)*

Project Sample ID	Non-Compliant IS	% Recovery	Analytes Affected
		[Insert %R]	
		[Insert %R]	

Action: If the internal standard is greater than the upper limit, positive results for the associated target analytes are qualified "J" and non-detects should not be qualified. If the internal standard is less than the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "UJ". If the internal standard is less than 10% of the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "R".

D. PCBs (EPA Method 8082)

Sample ID.	Inst.	Date Extracted	Date Analyzed	Time	Comments
632S-052903-1710	2	5/29/03	6/4/03	13:31	
632S-052903-1730	2	5/29/03	6/4/03	13:44	
632S-052903-1800	2	5/29/03	6/4/03	13:57	

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)** *(if NO, list non-compliant samples)*

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: If holding times were not met, positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

2. **Initial Calibration Procedures.** Were Initial Calibration Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (Percent Relative Standard Deviation (%RSD) must be less than or equal to 20%. Two single component peaks may exceed 20%, but must be less than or equal to 30%)

Inst.	Date/ Time	Target Analyte, %RSD	Associated Samples	Corrective Action
2	5/29/03 18:23	None		Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.

3. **Continuing Calibration Procedures.** Were Continuing Calibration Procedures met? **(N)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (Percent Drift (%D) must be less than or equal to 20%)

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
2	5/27/03 21:42	None		Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.
2	6/4/03 11:35	None		
2	6/4/03 14:48	TCMX, 25.1	632S-052903-1710 632S-052903-1730 632S-052903-1800	

4. **Blank Sample Analysis (Trip, Equipment, Field, Method).** Were target Aroclors identified in any Blank? **(N)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank, I2 6/4/03, 14:10				

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 5 times (5X) the amount in any blank.

NOTE : Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

5. **System Monitoring Compounds Recoveries.** Were surrogate compound recoveries (Tetrachloro-m-xylene and Decachlorobiphenyl) outside acceptance criteria of 30-150% R? **(N)** *(if YES, indicate surrogate recovery criteria, project sample ID and %R)*

Project Sample ID	SRG01 %R	SRG02 %R	Corrective Action

Action: If the surrogate percent recovery is greater than the upper acceptance limit associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the surrogate percent recovery is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "UJ". If the surrogate percent recovery is less than 10% associated target analyte positive results are qualified "J" and non-detects are qualified "R".

6. **Laboratory Control Samples (LCS), Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries.** Were percent recoveries outside acceptance criteria in either the LCS/LCSD or MS/MSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
		[Insert %R Range]		
		[Insert %R Range]		

Action: If the LCS %R is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the LCS %R is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "R". If the MS/MSD is from a project sample use the same rules as the LCS/LCSD and apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

E. METALS (SW846 6010B, ICP-AES)

Sample ID.	Prep Batch	Date	Time	Comments
4009-052903-1110	3155109	5/29/03	11:10	
4009-052903-1150	3155109	5/29/03	11:50	

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)** *(if NO, list non-compliant samples)*

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: If aqueous sample pH ³2, positive results are qualified "J", estimated and non-detected analytes as "R", rejected. If held > 180 days, positive results are qualified "J", estimated and non-detected analytes as "R", rejected

2. **Initial Calibration Verification (ICV) Procedures.** Were ICV Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples)*. (*Must be calibrated once every 24 hours. Acceptance criteria 70-130 %R for Antimony, Lead, and Thallium, 80-120 %R for Mercury and 90-110% R for all other metals*).

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the ICV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the ICV %R falls in the range 75-89% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the ICV %R falls in the range 111-125% results above the MDL are qualified as estimated "J", and non-detects should not be qualified. If the ICV %R is >125% results above the MDL are qualified as estimated "J", and non-detects are qualified "R". If the ICV %R is > 160% all results above the MDL are rejected "R".

3. **Continuing Calibration Verification Procedures.** Were CCV Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples)*. (*Must be calibrated every 2 hours. Acceptance criteria 70-130 %R for Antimony, Lead, and Thallium, 80-120 %R for Mercury, and 90-110% recovery for all other metals*).

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the ICV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the CCV %R falls in the range 75-89% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the CCV %R falls in the range 111-125% results above the MDL are qualified as estimated "J", and non-detects should not be qualified. If the CCV %R is >125% results above the MDL are qualified as estimated "J", and non-detects are qualified "R". If the CCV %R is > 160% all results above the MDL limit are rejected "R".

4. **Blank Sample Analysis (Equipment, Field, Method).** Were target Metals identified in any Blank? **(N)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank Prep Batch 3155109	None			

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the target analytes.

NOTE : Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

5. **Laboratory Control Samples (LCS). .** Were percent recoveries outside acceptance criteria in either the LCS or LCSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

(Serves to monitor the overall performance of each step during the analysis, including the sample preparation. All aqueous LCS %R's must fall within the control limits of 80-120%, except for Antimony and Silver which have no fixed control limits.)

LCS ID	Target Analyte	%R	Associated Project Samples	Action

Action: For an aqueous LCS if the %R is 50-79%, qualify results ³MDL as "J" and non-detects as "UJ". If the %R is >120%, qualify results ³MDL as "J" and non-detects should not be qualified. If the %R is <50%, qualify results ³MDL as "J" and non-detects as "R". If the %R is >150%, qualify all results as "R". For the soil LCS, if the %R is > the upper limit qualify results ³MDL as "J" and non-detects should not be qualified. If the %R is < the lower limit qualify results ³MDL as "J" and non-detects as "UJ".

6. **Duplicate Sample Analysis.** Were the calculated % RPD values within the acceptance criteria (20%) for all target analytes greater than **5X** the MDL? **No duplicate samples taken.**

Sample ID	Target Analyte	RPD	Associated Samples	Recommendation
				Qualify results greater than the MDL as estimated "J", and non-detects as estimated "UJ".

Action: Analytes with RPDs greater than 20% should be qualified "J" and non-detects qualified "UJ".

7. **Contract Required Detection Limit (CRDL) Standard:** Were target anlayte reporting limits (RL) below the CRDL? **(Y)** *(if NO, list target analyte, RL, CRDL and indicate reason why the RL was > the CRDL, e.g. dilution for high target compound detection)*

Sample ID	Target Analyte	RL	CRDL	Reason why the RL was > the CRDL

8. **Interference Check Standard (ICS):** Were all ICS recoveries +/- 20% of the true value? **(Y)** (if NO, list ICS, target analyte(s), %R and affected samples)

ICS ID	Target Analyte	%R	Affected Samples

Action: Reported Results above the RL for samples analyzed after an ICS with analytes that are outside these limits should be flagged "J" as estimated

9. **Spiked Sample Analysis.** Were percent recoveries outside acceptance criteria in either the MS/MSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
		[Insert %R Range]		
		[Insert %R Range]		

Action: If the MS %R is <30%, results > the MDL are qualified as "J" and non-detects as "R. If the MS %R is 30-74%, results > the MDL are qualified as "J" and non-detects as "UJ. If the MS %R is >125%, results > the MDL are qualified as "J" and non-detects should not be qualified. If the MS/MSD is from a project sample apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

10. **Serial Dilution %D:** Were the calculated % D values within the acceptance criteria (10%) for all target analytes greater than **50X** the MDL? **(Y)** *(if NO, list target analyte, %D and affected samples)*

Sample ID	Target Analyte	Serial Dilution (% D)	Associated Samples	Recommendation
				Qualify results greater than the MDL as estimated "J", and non-detects as estimated "UJ".

Action: For serial dilution %D results >10%, qualify results > the MDL as "J" and non-detects as "UJ".

F. GENERAL CHEMISTRY

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)** *(if NO, list non-compliant samples)*

Non Compliant Samples

Sample ID	Target Analyte	Holding Time Required	Holding Time Achieved	Action Required

Action: If aqueous CN sample pH <14, positive results are estimated "J" and non-detects qualified "R". If held > 14days, positive results are qualified "J", and non-detects are qualified "R".

2. **Initial Calibration Verification (ICV) Procedures.** Were ICV Procedures met? **No initial calibration verification procedures taken.**

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the ICV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the ICV %R falls in the range 75-80% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the ICV %R is >125% results above the MDL are qualified as estimated "J". If the ICV %R is > 150% all results are rejected "R".

3. **Continuing Calibration Verification Procedures.** Were CCV Procedures met? **No continuing verification procedures taken.**

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the CCV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the CCV %R falls in the range 75-80% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the CCV %R is >125% results above the MDL are qualified as estimated "J", and non-detects are qualified "R". If the CCV %R is > 150% all results above the MDL are rejected "R".

4. **Blank Sample Analysis (Equipment, Field, Method).** Were target Metals identified in any Blank? **(N)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 5 times (5X) the amount in any blank for the target analytes.

NOTE : Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

5. **Laboratory Control Samples (LCS).** Were percent recoveries outside acceptance criteria in either the LCS or LCSD? **No samples taken.**

LCS ID	Target Analyte	%R	Associated Project Samples	Action

Action: If the %R is 50-79%, qualify results ³MDL as "J" and non-detects as "UJ". If the %R is >120%, qualify results ³MDL as "J" and non-detects should not be qualified. If the %R is <50%, qualify results ³MDL as "J" and non-detects as "R". If the %R is >150%, qualify all results as "R".

6. **Matrix Spike Samples:** Were percent recoveries outside acceptance criteria in either the MS or MSD? **No samples taken.**

MS/MSD ID	Target Analyte	%R	Associated Project Samples	Action

Action: If the MS %R is <30%, results > the MDL are qualified as "J" and non-detects as "UJ. If the MS %R is 30-74%, results > the MDL are qualified as "J" and non-detects as "UJ. If the MS %R is >125% results, > the MDL are qualified as "J" and non-detects should not be qualified. If the MS/MSD is from a project sample apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

7. **Sample Duplicate:** Were the calculated % RPD values within the acceptance criteria (20%) for all target analytes greater than **5X** the MDL? **(Y)** *(if NO, list target analyte, RPD and affected samples)*

Sample ID	Target Analyte	RPD	Associated Samples	Recommendation
				Qualify results greater than the MDL as estimated "J", and non-detects as estimated "UJ".

Action: Analytes with RPDs greater than 20% for values greater than 5X the RL should be qualified "J" and non-detects "UJ".

49017-026 - SDG#: 3E31136

A. SAMPLE RECIEPT/ CHAIN OF CUSTODY

1. Samples were collected on May 30 and June 2, 2003 and received at the laboratory on May 31 and June 3, 2003.
Sample coolers were received at temperatures ranging from 1.2 to 5.6°C, with wet ice present.

Parameter	Analytical Method	Holding Time Criteria
Cyanide, Total	SW846 9012A	14 Days
Mercury in Liquid Waste (Manual Cold-Vapor)	SW846 7470A	28 Days
Polychlorinated Biphenyls	SW846 8082	7 Days Ext. Solid/14 Day Ext. AQ/40 Days Post Ext.
Semi-volatile Organic Compounds by GC/MS	SW846 8270C	7 Days Ext./40 Days Post Ext.
Total Residue as Percent Solids	MCAWW 160.3 MOD	7 Days
Trace Inductively Coupled Plasma Metals	SW846 6010B	6 Months
Volatile Organic Compounds by GC/MS	SW846 8260B	14 Days

List all project samples in table below. *Identify field QC samples and potential problem samples.*

Lab ID	Sample ID	Matrix	Comments
A3E310136	**620D-053003-0945**	AQ	
	620D-053003-TB	AQ	Trip Blank
	620S-053003-1150	AQ	
	622D-053003-1525	AQ	
	622S-053003-1655	AQ	
A3E310156	**4008-053003-0940**	S	
	4008-053003-1015	S	
	4008-053003-1045	S	Matrix Spike/Matrix Spike Duplicate
	4008-053003-TB	AQ	Trip Blank
	4008-053003-EB	AQ	Equipment Blank
A3F030303	**624S-060203-1055**	AQ	
	624S-060203-TB	AQ	Trip Blank
	624D-060203-1250	AQ	
	625D-060203-1600	AQ	
	625S-060203-1745	AQ	

2. Case Narrative Issues & Miscellaneous Comments.
Metals – No ICP Trace Form IX was provided for batches 3160094 and 3160104. The serial dilution was performed on a different client's sample from the same QC batch(es).

B. VOCs (EPA Method 8260B)

Sample ID.	Inst.	Date	Time	Comments
620D-053003-0945	10	6/8	00:32	
620D-053003-TB	10	6/8	00:58	TB-Acetone 3.0 ppb, 2-Butanone 1.1 ppb
620S-053003-1150	10	6/8	01:23	
622D-053003-1525	10	6/8	01:49	
622S-053003-1655	10	6/9	12:23	
4008-053003-0940	12	6/4	23:55	
4008-053003-1015	12	6/5	00:17	

4008-053003-1045	12	6/5	00:39	MS/MSD
4008-053003-TB	12	6/10	19:40	TB-Acetone 1.7 ppb, 2-Butanone 1.2 ppb
4008-053003-EB	12	6/10	20:03	EB-ND
624S-060203-1055	7	6/12	03:44	
624S-060203-TB	7	6/12	04:06	TB-Acetone 2.1 ppb, 2-Butanone 0.97 ppb
624D-060203-1250	7	6/12	04:28	
625D-060203-1600	7	6/12	04:50	
625S-060203-1745	7	6/12	05:12	

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)**

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: If holding times were not met, positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

2. **GC/MS Instrument Performance Check.** GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. **(Y)**

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: Refer to the Functional Guidelines for Organic Data Review, pages 10-11 for specific actions.

3. **Initial Calibration Procedures.** Were Initial Calibration Procedures met? **(N)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (Percent Relative Standard Deviation (%RSD) must be less than or equal to 30%)

Inst.	Date/ Time	Target Analyte, %RSD	Associated Samples	Corrective Action
7	5/27 11:46	Trichloroethene, 32.318	**624S-060203-1055** **624S-060203-TB** **624D-060203-1250** **625D-060203-1600** **625S-060203-1745**	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
10	5/21 09:49	None		
12	6/3 20:46	2-Nitropropane, 36.681	**4008-053003-0940** **4008-053003-1015** **4008-053003-1045** **4008-053003-TB** **4008-053003-EB**	

4. **Continuing Calibration Procedures.** Were Continuing Calibration Procedures met? **(N)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (Percent Drift (%D) must be less than or equal to 25%)

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
7	6/11 19:45	Acetone, -27.4 Carbon tetrachloride, 27.1 Dibromochloromethane, 26.1 Bromoform, 52.8 1,2,4-Trichlorobenzene, -28.2	**624S-060203-1055** **624S-060203-TB** **624D-060203-1250** **625D-060203-1600** **625S-060203-1745**	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.

10	6/7 14:58	None		
10	6/9 08:57	Bromoform, 34.9	**622S-053003-1655**	
12	6/4 14:21	Acetone, 29.2 Carbon disulfide, 26.1 1,2-Dibromo-3-chloropropane, 30.7 1,2,4-Trichlorobenzene, 53.2	**4008-053003-0940** **4008-053003-1015** **4008-053003-1045**	
12	6/10 17:48	Bromomethane, 26.2 Chloroethane, 29.0 2-Butanone, 32.1 Trichlorofluoromethane, 26.4	**4008-053003-TB** **4008-053003-EB**	

5. **Blank Sample Analysis (Trip, Equipment, Field, Method).** Were target VOCs identified in any Blank? **(Y)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Trip Blank 620D-053003-TB	Acetone 2-Butanone	3.0 µg/L 1.1 µg/L	**620D-053003-0945** **620S-053003-1150** **622D-053003-1525** **622S-053003-1655**	30.0 µg/L 11.0 µg/L
Trip Blank 4008-053003-TB	Acetone 2-Butanone	1.7 µg/L 1.2 µg/L	**4008-053003-0940** **4008-053003-1015** **4008-053003-1045** **4008-053003-EB**	17.0 µg/L 12.0 µg/L
Trip Blank 624S-060203-TB	Acetone 2-Butanone	2.1 µg/L 0.97 µg/L	**624S-060203-1055** **624D-060203-1250** **625D-060203-1600** **625S-060203-1745**	21.0 µg/L 9.7 µg/L
Method Blank, I-7 6/11/03, 21:12	None			
Method Blank, I-10 6/7/03, 16:41	Acetone Bromomethane	1.5 µg/L 0.44 µg/L	**620D-053003-0945** **620D-053003-TB** **620S-053003-1150** **622D-053003-1525**	15.0 µg/L 4.4 µg/L
Method Blank, I-10 6/9/03, 10:40	Bromomethane	0.51 µg/L	**622S-053003-1655**	2.55 µg/L
Method Blank, I-12 6/4/03, 21:40	Acetone 1,2,4-Trichlorobenzene	70 µg/kg 29 µg/kg	**4008-053003-0940** **4008-053003-1015** **4008-053003-1045**	700 µg/L 145 µg/kg
Method Blank, I-12 6/10/03, 18:56	1,2,4-Trichlorobenzene	0.42 µg/L	**4008-053003-TB** **4008-053003-EB**	2.1 µg/L

<u>Action:</u> In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the common laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane), or 5 times (5X) the amount for other target compounds.
NOTE :Trip blank associated samples include all samples shipped within the same sample cooler. Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

6. **System Monitoring Compounds Recoveries.** Were surrogate compound recoveries outside acceptance criteria specified by the laboratory? **(N)**

Surrogate Percent Recovery Criteria			
Surrogate		**Aqueous Matrix**	**Solid Matrix**
Dibromofluoromethane	SRG01	73-122	59-138
1,2-Dichloroethane-d4	SRG02	61-128	61-130
Toluene-d8	SRG03	76-110	60-143
4-Bromofluorobenzene	SRG04	74-116	47-158

Project Sample ID	SRG01 %R	SRG02 %R	SRG03 %R	SRG04 %R

Action: If the surrogate percent recovery is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the surrogate percent recovery is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "UJ". If the surrogate percent recovery is less than 10% associated target analyte positive results are qualified "J" and non-detects are qualified "R".

7. **Laboratory Control Samples (LCS), Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries.** Were percent recoveries outside acceptance criteria in either the LCS/LCSD or MS/MSD? **(N)**

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples

Action: If the LCS %R is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the LCS %R is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "R". If the MS/MSD is from a project sample use the same rules as the LCS/LCSD and apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

8. **Internal Standard Recoveries.** Did the calculated response of each IS compound fall within the QA/QC criteria of +100% and –50% of the corresponding CCV standard? **(Y)**

Project Sample ID	Non-Compliant IS	% Recovery	Analytes Affected

Action: If the internal standard is greater than the upper limit, positive results for the associated target analytes are qualified "J" and non-detects should not be qualified. If the internal standard is less than the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "UJ". If the internal standard is less than 10% of the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "R".

C. SVOCs (EPA Method 8270C)

Sample ID.	Inst.	Date Extracted	Date Analyzed	Time	Comments
4008-053003-0940	8	6/2	6/6	15:14	
4008-053003-1015	8	6/2	6/6	15:42	
4008-053003-1045	8	6/2	6/6	16:11	MS/MSD
4008-053003-EB	6	6/1	6/9	14:23	EB-bis(2-Ethylhexyl)phthalate 0.43 ppb

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)**

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: If holding times were not met, positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

2. **GC/MS Instrument Performance Check.** GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. **(Y)** *(if NO, list non compliant instrument/affected samples)*

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: Refer to the Functional Guidelines for Organic Data Review, pages 49-50 for specific actions.

3. **Initial Calibration Procedures.** Were Initial Calibration Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (Percent Relative Standard Deviation (%RSD) must be less than or equal to 30%)

Inst.	Date/ Time	Target Analyte, %RSD	Associated Samples	Corrective Action
6	6/4 11:53	None		Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
8	6/5 13:06	None		

4. **Continuing Calibration Procedures.** Were Continuing Calibration Procedures met? **(N)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (Percent Drift (%D) must be less than or equal to 25%)

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
6	6/9 08:13	None		Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
8	6/6 09:51	None		

5. **Blank Sample Analysis (Trip, Equipment, Field, Method).** Were target SVOCs identified in any Blank? **(Y)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Equipment Blank 4008-053003-EB	bis(2-Ethylhexyl)phthalate	0.43 µg/L	**4008-053003-0940** **4008-053003-1015** **4008-053003-1045**	4.3 µg/L
Method Blank, I-6 6/9/03, 12:58	bis(2-Ethylhexyl)phthalate	2.9 µg/L	**4008-053003-EB**	29.0 µg/L
Method Blank, I-8				

6/6/03, 14:17				

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the common laboratory contaminants (phthalate esters), or 5 times (5X) the amount for other target compounds.

6. **System Monitoring Compounds Recoveries.** Were surrogate compound recoveries outside acceptance criteria specified by the laboratory? **(N)** *(if YES, indicate surrogate recovery criteria, project sample ID and %R)*

Surrogate Percent Recovery Criteria			
Surrogate		**Aqueous Matrix**	**Solid Matrix**
Nitrobenzene-d5	SRG01	32-112	42-110
2-Fluorobiphenyl	SRG02	30-110	43-110
Terphenyl-d14	SRG03	10-144	37-137
Phenol-d5	SRG04	10-113	25-115
2-Fluorophenol	SRG05	13-110	11-116
2,4,6-Tribromophenol	SRG06	21-122	35-116

Project Sample ID	SRG01 %R	SRG02 %R	SRG03 %R	SRG04 %R	SRG05 %R	SRG06 %R

Action: If the surrogate percent recovery is greater than the upper acceptance limit associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the surrogate percent recovery is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "UJ". If the surrogate percent recovery is less than 10% associated target analyte positive results are qualified "J" and non-detects are qualified "R".

7. **Laboratory Control Samples (LCS), Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries.** Were percent recoveries outside acceptance criteria in either the LCS/LCSD or MS/MSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
		[Insert %R Range]		
		[Insert %R Range]		

Action: If the LCS %R is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the LCS %R is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "R". If the MS/MSD is from a project sample use the same rules as the LCS/LCSD and apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

8. **Internal Standard Recoveries.** Did the calculated response of each IS compound fall within the QA/QC criteria of +100% and –50% of the corresponding CCV standard? **(Y)** *(if NO, indicate project sample, non-compliant IS, %R, analytes affected-obtain from laboratory SOP)*

Project Sample ID	Non-Compliant IS	% Recovery	Analytes Affected

Action: If the internal standard is greater than the upper limit, positive results for the associated target analytes are qualified "J" and non-detects should not be qualified. If the internal standard is less than the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "UJ". If the internal standard is less than 10% of the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "R".

D. PCBs (EPA Method 8082)

Sample ID.	Inst.	Date Extracted	Date Analyzed	Time	Comments
4008-053003-EB	2	5/31	6/2	20:59	

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)** *(if NO, list non-compliant samples)*

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: If holding times were not met, positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

2. **Initial Calibration Procedures.** Were Initial Calibration Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (Percent Relative Standard Deviation (%RSD) must be less than or equal to 20%. Two single component peaks may exceed 20%, but must be less than or equal to 30%)

Inst.	Date/ Time	Target Analyte, %RSD	Associated Samples	Corrective Action
2	5/28 11:57	None		Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.

3. **Continuing Calibration Procedures.** Were Continuing Calibration Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (Percent Drift (%D) must be less than or equal to 20%)

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
2	5/27 21:42	None		Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.
2	6/2 18:24	None		
2	6/2 21:51	None		

4. **Blank Sample Analysis (Trip, Equipment, Field, Method).** Were target Aroclors identified in any Blank? **(N)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank, I-2 6/2/03, 21:12	None			

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 5 times (5X) the amount in any blank.

NOTE : Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

5. **System Monitoring Compounds Recoveries.** Were surrogate compound recoveries (Tetrachloro-m-xylene, QC limit = 45-120 and Decachlorobiphenyl, QC limits=24-128 outside acceptance criteria? **(N)** *(if YES, indicate surrogate recovery criteria, project sample ID and %R)*

Project Sample ID	SRG01 %R	SRG02 %R	Corrective Action

Action: If the surrogate percent recovery is greater than the upper acceptance limit associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the surrogate percent recovery is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "UJ". If the surrogate percent recovery is less than 10% associated target analyte positive results are qualified "J" and non-detects are qualified "R".

6. **Laboratory Control Samples (LCS), Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries.** Were percent recoveries outside acceptance criteria in either the LCS/LCSD or MS/MSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
		[Insert %R Range]		
		[Insert %R Range]		

Action: If the LCS %R is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the LCS %R is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "R". If the MS/MSD is from a project sample use the same rules as the LCS/LCSD and apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

E. METALS (SW846 6010B, ICP-AES)

Sample ID.	Prep Batch	Date	Time	Comments
4008-053003-0940	3160104	6/9	06:17	Pb only
4008-053003-1015	3160104	6/9	06:21	Pb only
4008-053003-1045	3160104	6/9	06:26	Pb only
4008-053003-EB	3160094	6/9	14:30	EB-Ba 0.0011 mg/L, Ca 0.38 mg/L, Cu 0.0019 mg/L, Mg 0.14 mg/L, Mn 0.0062 mg/L, K 0.27 mg/L
624D-060203-1250	3160094	6/9	13:31	

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)** *(if NO, list non-compliant samples)*

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: If aqueous sample pH ³2, positive results are qualified "J", estimated and non-detected analytes as "R", rejected. If held > 180 days, positive results are qualified "J", estimated and non-detected analytes as "R", rejected

2. **Initial Calibration Verification (ICV) Procedures.** Were ICV Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (*Must be calibrated once every 24 hours. Acceptance criteria 70-130 %R for Antimony, Lead, and Thallium, 80-120 %R for Mercury and 90-110% R for all other metals*).

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the ICV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the ICV %R falls in the range 75-89% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the ICV %R falls in the range 111-125% results above the MDL are qualified as estimated "J", and non-detects should not be qualified. If the ICV %R is >125% results above the MDL are qualified as estimated "J", and non-detects are qualified "R". If the ICV %R is > 160% all results above the MDL are rejected "R".

3. Continuing Calibration Verification Procedures. Were CCV Procedures met? **(N)** *(if NO, list non-compliant instrument, target analytes and affected samples)*. (*Must be calibrated every 2 hours. Acceptance criteria 70-130 %R for Antimony, Lead, and Thallium, 80-120 %R for Mercury, and 90-110% recovery for all other metals*).

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action
ICPST	6/9 1:48	Potassium, 110.4		
	6/9 2:50	Potassium, 111.6		
	6/9 3:53	Potassium 112.6		
	6/9 4:58	Potassium, 114.0		
	6/9 4:58	Potassium, 116.2		
	6/10 8:45	Aluminum, 9442.5 Antimony, 9366.8 Arsenic, 8841.9 Barium, 9657.5 Beryllium, 9767.0 Cadmium, 9865.8 Calcium, 5077.6 Chromium, ?0087.8 Cobalt, 9534.6 Copper, 9590.3 Iron, ?0286.6 Lead, 9475.5 Magnesium, 6980.3 Manganese, 9780.1 Potassium 0.0 Selenium, 9076.0 Silver, 9291.5 Sodium, 4444.2 Thallium, 9914.8 Vanadium, 9942.8 Zinc, 9391.6		
	6/10 3:29	Potassium, 110.0		
	6/10 4:37	Potassium, 1115		
	6/10 5:37	Potassium, 112.0		
	6/10 6:39	Potassium, 113.9		
	6/10 7:16	Potassium, 111.8		

<u>Action:</u> If the ICV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the CCV %R falls in the range 75-89% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the CCV %R falls in the range 111-125% results above the MDL are qualified as estimated "J", and non-detects should not be qualified. If the CCV %R is >125% results above the MDL are qualified as estimated "J", and non-detects are qualified "R". If the CCV %R is > 160% all results above the MDL limit are rejected "R".

4. **Blank Sample Analysis (Equipment, Field, Method).** Were target Metals identified in any Blank? **(Y)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Equipment Blank 4008-053003-EB	Barium Calcium Copper Magnesium Manganese Potassium	0.0011 mg/L 0.38 mg/L 0.0019 mg/L 0.14 mg/L 0.0062 mg/L 0.27 mg/L	None	0.011 mg/L 3.8 mg/L 0.019 mg/L 1.4 mg/L 0.062 mg/L 2.7 mg/L
Method Blank Prep Batch 3160094	Calcium Magnesium Manganese Potassium Zinc	0.36 mg/L 0.085 mg/L 0.00094 mg/L 0.28 mg/L 0.015 mg/L	**4008-053003-EB** **624S-060203-1055**	3.6 mg/L 0.85 mg/L 0.0094 mg/L 2.8 mg/L 0.15 mg/L
Method Blank Prep Batch 3160104	None			

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the target analytes.

NOTE : Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

5. **Laboratory Control Samples (LCS).** Were percent recoveries outside acceptance criteria in either the LCS or LCSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

(Serves to monitor the overall performance of each step during the analysis, including the sample preparation. All aqueous LCS %R's must fall within the control limits of 80-120%, except for Antimony and Silver which have no fixed control limits.)

LCS ID	Target Analyte	%R	Associated Project Samples	Action

Action: For an aqueous LCS if the %R is 50-79%, qualify results ³MDL as "J" and non-detects as "UJ". If the %R is >120%, qualify results ³MDL as "J" and non-detects should not be qualified. If the %R is <50%, qualify results ³MDL as "J" and non-detects as "R". If the %R is >150%, qualify all results as "R". For the soil LCS, if the %R is > the upper limit qualify results ³MDL as "J" and non-detects should not be qualified. If the %R is < the lower limit qualify results ³MDL as "J" and non-detects as "UJ".

6. **Duplicate Sample Analysis.** Were the calculated % RPD values within the acceptance criteria (20%) for all target analytes greater than **5X** the MDL? **(Y)** *(if NO, list target analyte, RPD and affected samples)*

Sample ID	Target Analyte	RPD	Associated Samples	Recommendation
				Report average values

Action: Analytes with RPDs greater than 20% should be qualified "J" and non-detects qualified "UJ".

7. **Contract Required Detection Limit (CRDL) Standard:** Were target anlayte reporting limits (RL) below the CRDL? **(Y)** *(if NO, list target analyte, RL, CRDL and indicate reason why the RL was > the CRDL, e.g. dilution for high target compound detection)*

Sample ID	Target	RL	CRDL	Reason why the RL was > the CRDL

	Analyte			

8. **Interference Check Standard (ICS):** Were all ICS recoveries +/- 20% of the true value? **(Y)** (if NO, list ICS, target analyte(s), %R and affected samples)

ICS ID	Target Analyte	%R	Affected Samples

Action: Reported Results above the RL for samples analyzed after an ICS with analytes that are outside these limits should be flagged "J" as estimated

9. **Spiked Sample Analysis.** Were percent recoveries outside acceptance criteria in either the MS/MSD? **(Y)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
Lab MS	Aluminum Arsenic Iron	75-125 75-125 75-125	139,127 73,74 153,122	None

Action: If the MS %R is <30%, results > the MDL are qualified as "J" and non-detects as "R. If the MS %R is 30-74%, results > the MDL are qualified as "J" and non-detects as "UJ. If the MS %R is >125%, results > the MDL are qualified as "J" and non-detects should not be qualified. If the MS/MSD is from a project sample apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

10. **Serial Dilution %D:** Were the calculated % D values within the acceptance criteria (10%) for all target analytes greater than **50X** the MDL? **(Y)** *(if NO, list target analyte, %D and affected samples)*

Performed on another client's sample.

Sample ID	Target Analyte	Serial Dilution (% D)	Associated Samples	Recommendation
				Qualify results greater than the MDL as estimated "J", and non-detects as estimated "UJ".

Action: For serial dilution %D results >10%, qualify results > the MDL as "J" and non-detects as "UJ".

F. GENERAL CHEMISTRY

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)** *(if NO, list non-compliant samples)*

Non Compliant Samples

Sample ID	Target Analyte	Holding Time Required	Holding Time Achieved	Action Required

Action: If aqueous CN sample pH <14, positive results are estimated "J" and non-detects qualified "R". If held > 14days, positive results are qualified "J", and non-detects are qualified "R".

2. **Initial Calibration Verification (ICV) Procedures.** Were ICV Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples)*. (*Must be calibrated once every 24 hours. Acceptance criteria 70-130 %R for Antimony, Lead, and Thallium, 80-120 %R for Mercury and 90-110% R for all other metals*).

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the ICV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the ICV %R falls in the range 75-80% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the ICV %R is >125% results above the MDL are qualified as estimated "J". If the ICV %R is > 150% all results are rejected "R".

3. **Continuing Calibration Verification Procedures.** Were CCV Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples)*. (*Must be calibrated every 2 hours. Acceptance criteria 70-130 %R for Antimony, Lead, and Thallium, 80-120 %R for Mercury, and 90-110% recovery for all other metals*).

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the CCV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the CCV %R falls in the range 75-80% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the CCV %R is >125% results above the MDL are qualified as estimated "J", and non-detects are qualified "R". If the CCV %R is > 150% all results above the MDL are rejected "R".

4. **Blank Sample Analysis (Equipment, Field, Method).** Were target Metals identified in any Blank? **(N)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 5 times (5X) the amount in any blank for the target analytes.

NOTE : Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

5. **Laboratory Control Samples (LCS).** Were percent recoveries outside acceptance criteria in either the LCS or LCSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)* (Serves to monitor the overall performance of the analysis, including the sample preparation. All LCS %R must fall within the control limits of 80-120%.)

LCS ID	Target Analyte	%R	Associated Project Samples	Action

Action: If the %R is 50-79%, qualify results ³MDL as "J" and non-detects as "UJ". If the %R is >120%, qualify results ³MDL as "J" and non-detects should not be qualified. If the %R is <50%, qualify results ³MDL as "J" and non-detects as "R". If the %R is >150%, qualify all results as "R".

6. **Matrix Spike Samples:** Were percent recoveries outside acceptance criteria in either the MS or MSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*Evaluates the effect of the sample matrix on the accuracy of the analyte analysis.

Not performed for this SDG

MS/MSD ID	Target Analyte	%R	Associated Project Samples	Action

Action: If the MS %R is <30%, results > the MDL are qualified as "J" and non-detects as "UJ. If the MS %R is 30-74%, results > the MDL are qualified as "J" and non-detects as "UJ. If the MS %R is >125% results, > the MDL are qualified as "J" and non-

detects should not be qualified. If the MS/MSD is from a project sample apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

7. **Sample Duplicate:** Were the calculated % RPD values within the acceptance criteria (20%) for all target analytes greater than **5X** the MDL? **(Y)** *(if NO, list target analyte, RPD and affected samples)*

Sample ID	Target Analyte	RPD	Associated Samples	Recommendation
				Qualify results greater than the MDL as estimated "J", and non-detects as estimated "UJ".

Action: Analytes with RPDs greater than 20% for values greater than 5X the RL should be qualified "J" and non-detects "UJ".

49017-026 - SDG#: 3F04300

A. SAMPLE RECIEPT/ CHAIN OF CUSTODY

1. Samples were collected on June 3 and 4, 2003 and received at the laboratory on June 4 and 5, 2003.
Sample coolers were received at temperatures ranging from 3.9 to 3.6°C, with wet ice present.

Parameter	Analytical Method	Holding Time Criteria
Polychlorinated Biphenyls	SW846 8082	7 Days Ext. Solid/14 Day Ext. AQ/40 Days Post Ext.
Semi-volatile Organic Compounds by GC/MS	SW846 8270C	7 Days Ext./40 Days Post Ext.
Volatile Organic Compounds by GC/MS	SW846 8260B	14 Days

List all project samples in table below. *Identify field QC samples and potential problem samples.*

Lab ID	Sample ID	Matrix	Comments
A3F040300	**637S-060303-1000**	AQ	
	637S-060303-TB	AQ	Trip Blank
	638S-060303-1150	AQ	
	628S-060303-1515	AQ	
	628S-060303-FD	AQ	Field Duplicate (628S-060303-1515)
	628D-060303-1545	AQ	
	627D-060303-1835	AQ	Matrix Spike/Matrix Spike Duplicate
	627S-060303-1850	AQ	
	627S-060303-FD	AQ	Field Duplicate (627S-060303-1850)
A3F050116	**639S-060403-TB**	AQ	Trip Blank
	639S-060403-0900	AQ	
	636S-060403-1045	AQ	
	635S-060403-1330	AQ	
	632S-060403-1605	AQ	
	632S-060403-EB	AQ	Equipment Blank
A3F050127	**122-060403-1055**	AQ	
	122-060403-TB	AQ	Trip Blank
	118D-060403-1405	AQ	Matrix Spike/Matrix Spike Duplicate
	630S-060403-1810	AQ	

2. Case Narrative Issues & Miscellaneous Comments.
SVOCs - Two analyses were used to report sample 635S-060403-1330 due to high analyte concentrations.
The reporting limits for Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(a)pyrene, Dibenz(a,h)anthracene, and Indeno(1,2,3-cd)pyrene are lower than the standard reporting limits. There are no standards in the calibration curve to support these values; however, they are supported by the laboratory MDL's and IDL's.

B. VOCs (EPA Method 8260B)

Sample ID.	Inst.	Date	Time	Comments
637S-060303-1000	10	6/13	11:01	
637S-060303-TB	10	6/13	11:24	TB-Acetone 1.5 ppb, 2-Butanone 1.1 ppb
638S-060303-1150	10	6/13	13:11	
628S-060303-1515	10	6/13	11:46	
628S-060303-FD	10	6/13	12:08	FD (628S-060303-1515)
628D-060303-1545	10	6/13	14:19	

627D-060303-1835	10	6/13	12:49	MS/MSD
627S-060303-1850	10	6/13	19:55	
627S-060303-FD	10	6/13	20:17	FD (627S-060303-1850)
639S-060403-TB	7	6/10	23:05	TB-Acetone 1.9 ppb, 2-Butanone 0.89 ppb
639S-060403-0900	7	6/10	23:27	
636S-060403-1045	7	6/10	23:48	
635S-060403-1330	7	6/11	00:10	
632S-060403-1605	7	6/11	00:32	
632S-060403-EB	7	6/11	00:54	EB-Acetone 2.6 ppb, 2-Butanone 1.1 ppb, 1,4-Dichlorobenzene 0.55 ppb
122-060403-1055	7	6/11	01:15	
122-060403-TB	7	6/11	01:37	TB-Acetone 3.0 ppb, 2-Butanone 1.1 ppb, 1,1-Dichloroethene 0.44 ppb
118D-060403-1405	7	6/11	01:58	MS/MSD
630S-060403-1810	7	6/11	03:04	

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)**

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: If holding times were not met, positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

2. **GC/MS Instrument Performance Check.** GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. **(Y)**

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: Refer to the Functional Guidelines for Organic Data Review, pages 10-11 for specific actions.

3. **Initial Calibration Procedures.** Were Initial Calibration Procedures met? **(N)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (Percent Relative Standard Deviation (%RSD) must be less than or equal to 30%)

Inst.	Date/ Time	Target Analyte, %RSD	Associated Samples	Corrective Action
7	5/27 11:46	Trichloroethene, 32.318	**639S-060403-TB** **639S-060403-0900** **636S-060403-1045** **635S-060403-1330** **632S-060403-1605** **632S-060403-EB** **122-060403-1055** **122-060403-TB** **118D-060403-1405** **630S-060403-1810**	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.

10	6/13 11:36	Acetone, 36.683	**637S-060303-1000** **637S-060303-TB** **638S-060303-1150** **628S-060303-1515** **628S-060303-FD** **628D-060303-1545** **627D-060303-1835** **627S-060303-1850** **627S-060303-FD**	

4. Continuing Calibration Procedures. Were Continuing Calibration Procedures met? **(N)** *(if NO, list non-compliant instrument, target analytes and affected samples)*. (Percent Drift (%D) must be less than or equal to 25%)

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
7	6/10 20:33	Bromoform, 58.7 Acetone, 28.7 Dibromochloromethane, 38.7 trans-1,3-Dichloropropene, 33.6 Carbon tetrachloride, 30.3 Dichlorodifluoromethane, 31.3 Trichlorofluoromethane, 26.2 1,2-Dibromo-3-chloropropane, 26.0	**639S-060403-TB** **639S-060403-0900** **636S-060403-1045** **635S-060403-1330** **632S-060403-1605** **632S-060403-EB** **122-060403-1055** **122-060403-TB** **118D-060403-1405** **630S-060403-1810**	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
10	6/13 09:05	2-Hexanone, 46.1 Acetone, 170.5 2-Butanone, 99.4	**637S-060303-1000** **637S-060303-TB** **638S-060303-1150** **628S-060303-1515** **628S-060303-FD** **628D-060303-1545** **627D-060303-1835** **627S-060303-1850** **627S-060303-FD**	

5. Blank Sample Analysis (Trip, Equipment, Field, Method). Were target VOCs identified in any Blank? **(Y)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Trip Blank 637S-060303-TB	Acetone 2-Butanone	1.5 µg/L 1.1 µg/L	**637S-060303-1000** **638S-060303-1150** **628S-060303-1515** **628S-060303-FD** **628D-060303-1545** **627D-060303-1835** **627S-060303-1850** **627S-060303-FD**	15.0 µg/L 11.0 µg/L
Trip Blank 639S-060403-TB	Acetone 2-Butanone	1.9 µg/L 0.89 µg/L	**639S-060403-0900** **636S-060403-1045** **635S-060403-1330** **632S-060403-1605** **632S-060403-EB**	19.0 µg/L 8.9 µg/L
Equipment Blank 632S-060403-EB	Acetone 2-Butanone 1,4-Dichlorobenzene	2.6 µg/L 1.1 µg/L 0.55 µg/L	**639S-060403-0900** **636S-060403-1045** **635S-060403-1330** **632S-060403-1605**	26.0 µg/L 11.0 µg/L 2.75 µg/L

			122-060403-1055 **118D-060403-1405** **630S-060403-1810**	
Trip Blank 122-060403-TB	Acetone 2-Butanone 1,4-Dichlorobenzene	3.0 µg/L 1.1 µg/L 0.44 µg/L	**122-060403-1055** **118D-060403-1405** **630S-060403-1810**	30.0 µg/L 11.0 µg/L 2.2 µg/L
Method Blank, I-7 6/10/03, 22:00	None			
Method Blank, I-10 6/13/03, 10:34	None			

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the common laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane), or 5 times (5X) the amount for other target compounds.
NOTE :Trip blank associated samples include all samples shipped within the same sample cooler. Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

6. **System Monitoring Compounds Recoveries.** Were surrogate compound recoveries outside acceptance criteria specified by the laboratory? **(N)**

Surrogate Percent Recovery Criteria			
Surrogate		**Aqueous Matrix**	**Solid Matrix**
Dibromofluoromethane	SRG01	73-122	
1,2-Dichloroethane-d4	SRG02	61-128	
Toluene-d8	SRG03	76-110	
4-Bromofluorobenzene	SRG04	74-116	

Project Sample ID	**SRG01 %R**	**SRG02 %R**	**SRG03 %R**	**SRG04 %R**

Action: If the surrogate percent recovery is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the surrogate percent recovery is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "UJ". If the surrogate percent recovery is less than 10% associated target analyte positive results are qualified "J" and non-detects are qualified "R".

7. **Laboratory Control Samples (LCS), Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries.** Were percent recoveries outside acceptance criteria in either the LCS/LCSD or MS/MSD? **(Y)**

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
MS/MSD 627D-060303-1835	Trichloroethene	62-130	58	**637S-060303-1000** **638S-060303-1150** **628S-060303-1515** **628S-060303-FD** **628D-060303-1545** **627D-060303-1835** **627S-060303-1850** **627S-060303-FD**

Action: If the LCS %R is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the LCS %R is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "R". If the MS/MSD is from a project sample use the same rules as the LCS/LCSD and apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

8. **Internal Standard Recoveries.** Did the calculated response of each IS compound fall within the QA/QC criteria of +100% and –50% of the corresponding CCV standard? **(Y)**

Project Sample ID	Non-Compliant IS	% Recovery	Analytes Affected

Action: If the internal standard is greater than the upper limit, positive results for the associated target analytes are qualified "J" and non-detects should not be qualified. If the internal standard is less than the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "UJ". If the internal standard is less than 10% of the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "R".

9. **Duplicate Sample Analysis.** Were the calculated % RPD values within the acceptance criteria (50%) for all target analytes greater than **5X** the RL? **(Y)** *(if NO, list target analyte, RPD and affected samples)*

RPDs for Field Duplicates

Sample ID	Target Analyte	RPD	Associated Samples	Recommendation

C. SVOCs (EPA Method 8270C)

Sample ID.	Inst.	Date Extracted	Date Analyzed	Time	Comments
636S-060403-1045	7	6/5	6/9	14:41	
635S-060403-1330	7	6/5	6/9	15:09	"E" qualifier for Caprolactam
	7	6/5	6/11	13:32	
632S-060403-1605	8	6/7	6/10	13:35	
632S-060403-EB	8	6/7	6/10	13:07	EB-bis(2-Ethylhexyl)phthalate 5.0 ppb

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)**

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: If holding times were not met, positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

2. **GC/MS Instrument Performance Check.** GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. **(Y)** *(if NO, list non compliant instrument/affected samples)*

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: Refer to the Functional Guidelines for Organic Data Review, pages 49-50 for specific actions.

3. Initial Calibration Procedures. Were Initial Calibration Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (Percent Relative Standard Deviation (%RSD) must be less than or equal to 30%)

Inst.	Date/ Time	Target Analyte, %RSD	Associated Samples	Corrective Action
7	6/1 17:38	None		Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
8	6/5 13:06	None		

4. Continuing Calibration Procedures. Were Continuing Calibration Procedures met? **(N)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (Percent Drift (%D) must be less than or equal to 25%)

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
7	6/9 09:33	4-Nitrophenol, 37.3	**636S-060403-1045**	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
7	6/11 10:18	4-Nitrophenol, 34.5	**635S-060403-1330**	
8	6/10 11:42	None		

5. Blank Sample Analysis (Trip, Equipment, Field, Method). Were target SVOCs identified in any Blank? **(Y)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Equipment Blank 632S-060403-EB	bis(2-Ethylhexyl) phthalate	**5.0 µg/L**	**636S-060403-1045** **635S-060403-1330** **632S-060403-1605**	**50.0 µg/L**
Method Blank, I-7 6/9/03, 10:00	None			
Method Blank, I-8 6/10/03, 12:10	bis(2-Ethylhexyl) phthalate	**1.7 µg/L**	**636S-060403-1045** **635S-060403-1330** **632S-060403-1605** **632S-060403-EB**	**17.0 µg/L**

<u>Action:</u> In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the common laboratory contaminants (phthalate esters), or 5 times (5X) the amount for other target compounds.

6. System Monitoring Compounds Recoveries. Were surrogate compound recoveries outside acceptance criteria specified by the laboratory? **(N)** *(if YES, indicate surrogate recovery criteria, project sample ID and %R)*

Surrogate Percent Recovery Criteria			
Surrogate		**Aqueous Matrix**	**Solid Matrix**
Nitrobenzene-d5	SRG01	32-112	
2-Fluorobiphenyl	SRG02	30-110	
Terphenyl-d14	SRG03	10-144	
Phenol-d5	SRG04	10-113	
2-Fluorophenol	SRG05	13-110	
2,4,6-Tribromophenol	SRG06	21-122	

Project Sample ID	SRG01 %R	SRG02 %R	SRG03 %R	SRG04 %R	SRG05 %R	SRG06 %R

Action: If the surrogate percent recovery is greater than the upper acceptance limit associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the surrogate percent recovery is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "UJ". If the surrogate percent recovery is less than 10% associated target analyte positive results are qualified "J" and non-detects are qualified "R".

7. **Laboratory Control Samples (LCS), Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries.** Were percent recoveries outside acceptance criteria in either the LCS/LCSD or MS/MSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
		[Insert %R Range]		
		[Insert %R Range]		

Action: If the LCS %R is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the LCS %R is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "R". If the MS/MSD is from a project sample use the same rules as the LCS/LCSD and apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

8. **Internal Standard Recoveries.** Did the calculated response of each IS compound fall within the QA/QC criteria of +100% and –50% of the corresponding CCV standard? **(Y)** *(if NO, indicate project sample, non-compliant IS, %R, analytes affected-obtain from laboratory SOP)*

Project Sample ID	Non-Compliant IS	% Recovery	Analytes Affected

Action: If the internal standard is greater than the upper limit, positive results for the associated target analytes are qualified "J" and non-detects should not be qualified. If the internal standard is less than the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "UJ". If the internal standard is less than 10% of the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "R".

D. PCBs (EPA Method 8082)

Sample ID.	Inst.	Date Extracted	Date Analyzed	Time	Comments
636S-060403-1045	2	6/5	6/10	14:02	
635S-060403-1330	2	6/5	6/10	14:15	
632S-060403-1605	2	6/6	6/8	12:20	
632S-060403-EB	2	6/6	6/8	12:33	EB-ND

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)** *(if NO, list non-compliant samples)*

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: If holding times were not met, positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

2. **Initial Calibration Procedures.** Were Initial Calibration Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples)*. (Percent Relative Standard Deviation (%RSD) must be less than or equal to 20%. Two single component peaks may exceed 20%, but must be less than or equal to 30%)

Inst.	Date/ Time	Target Analyte, %RSD	Associated Samples	Corrective Action
2	5/28 11:57	None		Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.

3. **Continuing Calibration Procedures.** Were Continuing Calibration Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples)*. (Percent Drift (%D) must be less than or equal to 20%)

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
2	5/27 21:42	None		Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.
2	6/8 10:11	None		
2	6/8 14:28	None		
2	6/9 12:37	None		
2	6/9 17:07	None		
2	6/10 12:07	None		
2	6/10 16:24	None		

4. **Blank Sample Analysis (Trip, Equipment, Field, Method).** Were target Aroclors identified in any Blank? **(N)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank, I-2 6/10/03, 14:28	None			
Method Blank, I-2 6/8/03, 12:46	None			

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 5 times (5X) the amount in any blank.

NOTE : Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

5. **System Monitoring Compounds Recoveries.** Were surrogate compound recoveries (Tetrachloro-m-xylene, QC limit = 45-120 and Decachlorobiphenyl, QC limits=24-128 outside acceptance criteria? **(Y)** *(if YES, indicate surrogate recovery criteria, project sample ID and %R)*

Project Sample ID	SRG01 %R	SRG02 %R	Corrective Action
LCS FP3VL1AC		19	
LCSD FP3VL1AD		22	

Action: If the surrogate percent recovery is greater than the upper acceptance limit associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the surrogate percent recovery is less than the lower acceptance limit

associated target analyte positive results are qualified "J" and non-detects are qualified "UJ". If the surrogate percent recovery is less than 10% associated target analyte positive results are qualified "J" and non-detects are qualified "R".

6. **Laboratory Control Samples (LCS), Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries.** Were percent recoveries outside acceptance criteria in either the LCS/LCSD or MS/MSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
		[Insert %R Range]		
		[Insert %R Range]		

Action: If the LCS %R is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the LCS %R is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "R". If the MS/MSD is from a project sample use the same rules as the LCS/LCSD and apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

49017-026 - SDG#: 3F06296

A. SAMPLE RECIEPT/ CHAIN OF CUSTODY

1. Samples were collected on June 5, 2003 and received at the laboratory on June 6, 2003.
Sample coolers were received at temperatures ranging from 1.9 to 4.3°C, with wet ice present.

Parameter	Analytical Method	Holding Time Criteria
Cyanide, Total	SW846 9012A	14 Days
Hexavalent Chromium	SW846 7196A	24 Hours
Mercury in Liquid Waste (Manual Cold-Vapor)	SW846 7470A	28 Days
Polychlorinated Biphenyls	SW846 8082	7 Days Ext. Solid/14 Day Ext. AQ/40 Days Post Ext.
Semi-volatile Organic Compounds by GC/MS	SW846 8270C	7 Days Ext./40 Days Post Ext.
Trace Inductively Coupled Plasma Metals	SW846 6010B	6 Months
Volatile Organic Compounds by GC/MS	SW846 8260B	14 Days

List all project samples in table below. *Identify field QC samples and potential problem samples.*

Lab ID	Sample ID	Matrix	Comments
A3F060296	**634S-060503-TB**	AQ	Trip Blank
	634S-060503-1025	AQ	
	633S-060503-1200	AQ	
	4008-060503-1600	AQ	
	4009-060503-1735	AQ	
	4009-060503-EB	AQ	Equipment Blank
A3F060311	**645S-060503-TB**	S	Trip Blank
	645S-060503-1025	S	
	644S-060503-1630	AQ	
	644S-060503-EB	AQ	Equipment Blank
A3F060317	**640S-060503-TB**	AQ	Trip Blank
	640S-060503-1005	AQ	
	4417-060503-1235	AQ	
	642S-060503-1550	AQ	
	642S-060503-FD	AQ	Field Duplicate (642S-060503-1550)
	643S-060503-1815	AQ	

2. Case Narrative Issues & Miscellaneous Comments.

SVOCs- Batch 3158102 contained more than one type of analyte lists. A separate batch had to be created due to reporting limitations and is associated with the original batch.
The reporting limit for Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenzo(a,h)anthracene, Indeno(1,2,3-cd)pyrene and Benzo(a)pyrene is lower than our standard reporting limi (SRL) but is supported by the laboratory MDL and/or IDLs. However, there are no standards in the calibration curve low enough to support these values.

Metals – No ICP Trace Form IX was provided for batch 3160094. The serial dilution was performed on a different client's sample from the same QC batch(es).

B. VOCs (EPA Method 8260B)

Sample ID.	Inst.	Date	Time	Comments
634S-060503-TB	7	6/11	03:25	TB-Acetone 3.0 ppb, 2-Butanone 1.1 ppb
634S-060503-1025	7	6/11	11:04	
633S-060503-1200	7	6/11	04:09	
4008-060503-1600	7	6/11	04:31	
4009-060503-1735	7	6/11	11:26	
4009-060503-EB	7	6/11	05:14	EB-Acetone 2.5 ppb, 2-Butanone 1.0 ppb, 1,4-Dichlorobenzene 0.49 ppb, Toluene 0.41 ppb
645S-060503-TB	7	6/11	05:36	TB-Acetone 2.7 ppb, 2-Butanone 0.93 ppb
645S-060503-1025	7	6/11	05:58	
644S-060503-1630	7	6/11	11:48	
644S-060503-EB	7	6/11	12:09	EB-Acetone 2.3 ppb, 2-Butanone 1.1 ppb, 1,4-Dichlorobenzene 0.57 ppb, Toluene 0.39 ppb
640S-060503-TB	7	6/11	12:31	TB-Acetone 2.6 ppb, 2-Butanone 1.2 ppb
4417-060503-1235	7	6/11	18:19	
642S-060503-1550	7	6/11	18:41	
642S-060503-FD	7	6/12	10:27	FD (642S-060503-1550)
643S-060503-1815	7	6/12	10:49	

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)**

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: If holding times were not met, positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

2. **GC/MS Instrument Performance Check.** GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. **(Y)**

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: Refer to the Functional Guidelines for Organic Data Review, pages 10-11 for specific actions.

3. **Initial Calibration Procedures.** Were Initial Calibration Procedures met? **(N)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (Percent Relative Standard Deviation (%RSD) must be less than or equal to 30%)

Inst.	Date/ Time	Target Analyte, %RSD	Associated Samples	Corrective Action

7	5/27 11:46	Trichloroethene, 32.318	**634S-060503-TB** **634S-060503-1025** **633S-060503-1200** **4008-060503-1600** **4009-060503-1735** **4009-060503-EB** **645S-060503-TB** **645S-060503-1025** **644S-060503-1630** **644S-060503-EB** **640S-060503-TB** **4417-060503-1235** **642S-060503-1550** **642S-060503-FD** **643S-060503-1815**	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.

4. **Continuing Calibration Procedures.** Were Continuing Calibration Procedures met? **(N)** *(if NO, list non-compliant instrument, target analytes and affected samples)*. (Percent Drift (%D) must be less than or equal to 25%)

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
7	6/10 20:33	Bromoform, 58.7 Acetone, 28.7 Dibromochloromethane, 38.7 trans-1,3-Dichloropropene, 33.6 Carbon tetrachloride, 30.3 Dichlorodifluoromethane, 31.3 Trichlorofluoromethane, 26.2 1,2-Dibromo-3-chloropropane, 26.0	**634S-060503-TB** **633S-060503-1200** **4008-060503-1600** **4009-060503-EB** **645S-060503-TB** **645S-060503-1025**	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
7	6/11 08:31	Dichlorodifluoromethane, -38.4 Acetone, -43.1 2-Butanone, -31.5 Carbon tetrachloride, 27.9 trans-1,3-Dichloropropene, 33.7 2-Hexanone, -29.5 Dibromochloromethane, 32.5 Bromoform, 51.6 1,2-Dibromo-3-chloropropane, -38.6	**634S-060503-1025** **4009-060503-1735** **644S-060503-1630** **644S-060503-EB** **640S-060503-TB** **4417-060503-1235** **642S-060503-1550**	
7	6/12 08:36	Dichlorodifluoromethane, -27.2 Acetone, -42.5 2-Butanone, -31.1 Carbon tetrachloride, 31.0 2-Hexanone, -35.9 Dibromochloromethane, 28.2 Bromoform, 51.0 1,2,4-Trichlorobenzene, -30.1	**642S-060503-FD** **643S-060503-1815**	

5. **Blank Sample Analysis (Trip, Equipment, Field, Method).** Were target VOCs identified in any Blank? **(Y)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Trip Blank 634S-060503-TB	Acetone 2-Butanone	3.0 µg/L 1.1 µg/L	**634S-060503-1025** **633S-060503-1200** **4008-060503-1600** **4009-060503-1735** **4009-060503-EB**	30.0 µg/L 11.0 µg/L

Equipment Blank 4009-060503-EB	Acetone 2-Butanone 1,4-Dichlorobenzene Toluene	2.5 µg/L 1.0 µg/L 0.49 µg/L 0.41 µg/L	**634S-060503-1025** **633S-060503-1200** **4008-060503-1600** **4009-060503-1735**	25.0 µg/L 10.0 µg/L 2.45 µg/L 2.05 µg/L
Trip Blank 645S-060503-TB	Acetone 2-Butanone	2.7 µg/L 0.93 µg/L	**645S-060503-1025** **644S-060503-1630** **644S-060503-EB**	27.0 µg/L 9.3 µg/L
Equipment Blank 644S-060503-EB	Acetone 2-Butanone 1,4-Dichlorobenzene Toluene	2.3 µg/L 1.1 µg/L 0.57 µg/L 0.39 µg/L	**645S-060503-1025** **644S-060503-1630**	23.0 µg/L 11.0 µg/L 2.85 µg/L 1.95 µg/L
Trip Blank 640S-060503-TB	Acetone 2-Butanone	2.6 µg/L 1.2 µg/L	**640S-060503-1005** **4417-060503-1235** **642S-060503-1550** **642S-060503-FD** **643S-060503-1815**	26.0 µg/L 12.0µg/L
Method Blank, I-7 6/10/03, 22:00	None			
Method Blank, I-7 6/11/03, 09:58	None			
Method Blank, I-7 6/12/03, 10:04	None			

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the common laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane), or 5 times (5X) the amount for other target compounds.
NOTE :Trip blank associated samples include all samples shipped within the same sample cooler. Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

6. **System Monitoring Compounds Recoveries.** Were surrogate compound recoveries outside acceptance criteria specified by the laboratory? **(N)**

Surrogate Percent Recovery Criteria			
Surrogate		**Aqueous Matrix**	**Solid Matrix**
Dibromofluoromethane	SRG01	73-122	
1,2-Dichloroethane-d4	SRG02	61-128	
Toluene-d8	SRG03	76-110	
4-Bromofluorobenzene	SRG04	74-116	

Project Sample ID	SRG01 %R	SRG02 %R	SRG03 %R	SRG04 %R

Action: If the surrogate percent recovery is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the surrogate percent recovery is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "UJ". If the surrogate percent recovery is less than 10% associated target analyte positive results are qualified "J" and non-detects are qualified "R".

7. **Laboratory Control Samples (LCS), Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries.** Were percent recoveries outside acceptance criteria in either the LCS/LCSD or MS/MSD? **(Y)**

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
642S-060503-FD Prep batch 3164304	Trichloroethene	62-130	131	643S-060503-1815

Action: If the LCS %R is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the LCS %R is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "R". If the MS/MSD is from a project sample use the same rules as the LCS/LCSD and apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

8. **Internal Standard Recoveries.** Did the calculated response of each IS compound fall within the QA/QC criteria of +100% and –50% of the corresponding CCV standard? **(Y)**

Project Sample ID	Non-Compliant IS	% Recovery	Analytes Affected

Action: If the internal standard is greater than the upper limit, positive results for the associated target analytes are qualified "J" and non-detects should not be qualified. If the internal standard is less than the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "UJ". If the internal standard is less than 10% of the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "R".

C. SVOCs (EPA Method 8270C)

Sample ID.	Inst.	Date Extracted	Date Analyzed	Time	Comments
634S-060503-1025	8	6/7	6/10	14:03	
633S-060503-1200	8	6/7	6/10	14:32	
4008-060503-1600	8	6/7	6/10	15:00	
4009-060503-1735	8	6/7	6/10	15:57	
4009-060503-EB	8	6/7	6/10	15:28	EB-bis(2-Ethylhexyl)phthalate 0.45 ppb
645S-060503-1025	8	6/7	6/10	16:26	
644S-060503-1630	8	6/7	6/10	16:54	
644S-060503-EB	8	6/7	6/10	17:23	EB-bis(2-Ethylhexyl)phthalate 2.3 ppb
4417-060503-1235	7	6/11	6/12	13:19	
4417-060503-1235RE	9	6/13	6/17	11:23	Reanalysis

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)**

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: If holding times were not met, positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

2. **GC/MS Instrument Performance Check.** GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. **(Y)** *(if NO, list non compliant instrument/affected samples)*

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: Refer to the Functional Guidelines for Organic Data Review, pages 49-50 for specific actions.

3. **Initial Calibration Procedures.** Were Initial Calibration Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (Percent Relative Standard Deviation (%RSD) must be less than or equal to 30%)

Inst.	Date/ Time	Target Analyte, %RSD	Associated Samples	Corrective Action
7	6/1 17:38	None		Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
8	6/5 13:06	None		
9	6/16 13:38	None		

4. **Continuing Calibration Procedures.** Were Continuing Calibration Procedures met? **(N)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (Percent Drift (%D) must be less than or equal to 25%)

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
7	6/12 10:04	Hexachlorocyclopentadiene, 28.8 4-Nitrophenol, 38.1 4,6-Dinitro-2-methylphenol, -27.7	**4417-060503-1235 (Don't use? - reanalysis)**	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
8	6/10 11:42	None		
9	6/17 09:31	None		

5. **Blank Sample Analysis (Trip, Equipment, Field, Method).** Were target SVOCs identified in any Blank? **(Y)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Equipment Blank 4009-060503-EB	bis(2-Ethylhexyl)phthalate	0.45 µg/L	**634S-060503-1025** **633S-060503-1200** **4008-060503-1600** **4009-060503-1735**	4.5 µg/L
Equipment Blank 644S-060503-EB	bis(2-Ethylhexyl)phthalate	2.3 µg/L	**645S-060503-1025** **644S-060503-1630** **4417-060503-1235RE**	2.3 µg/L
Method Blank, I-8 6/10/03, 12:10	bis(2-Ethylhexyl)phthalate	1.7 µg/L	**634S-060503-1025** **633S-060503-1200** **4008-060503-1600** **4009-060503-1735** **4009-060503-EB** **645S-060503-1025** **644S-060503-1630** **644S-060503-EB**	17.0 µg/L
Method Blank, I-7 6/12/03, 11:56	bis(2-Ethylhexyl)phthalate	0.86 µg/L	**None**	8.6 µg/L
Method Blank, I-9 6/17/03, 09:59	bis(2-Ethylhexyl)phthalate	5.8 µg/L	**4417-060503-1235RE**	58.0 µg/L

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the common laboratory contaminants (phthalate esters), or 5 times (5X) the amount for other target compounds.

6. **System Monitoring Compounds Recoveries.** Were surrogate compound recoveries outside acceptance criteria specified by the laboratory? **(N)** *(if YES, indicate surrogate recovery criteria, project sample ID and %R)*

Surrogate Percent Recovery Criteria			
Surrogate		**Aqueous Matrix**	**Solid Matrix**
Nitrobenzene-d5	SRG01	32-112	
2-Fluorobiphenyl	SRG02	30-110	
Terphenyl-d14	SRG03	10-144	
Phenol-d5	SRG04	10-113	
2-Fluorophenol	SRG05	13-110	
2,4,6-Tribromophenol	SRG06	21-122	

Project Sample ID	SRG01 %R	SRG02 %R	SRG03 %R	SRG04 %R	SRG05 %R	SRG06 %R

Action: If the surrogate percent recovery is greater than the upper acceptance limit associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the surrogate percent recovery is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "UJ". If the surrogate percent recovery is less than 10% associated target analyte positive results are qualified "J" and non-detects are qualified "R".

7. **Laboratory Control Samples (LCS), Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries.** Were percent recoveries outside acceptance criteria in either the LCS/LCSD or MS/MSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
		[Insert %R Range]		
		[Insert %R Range]		

Action: If the LCS %R is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the LCS %R is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "R". If the MS/MSD is from a project sample use the same rules as the LCS/LCSD and apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

8. **Internal Standard Recoveries.** Did the calculated response of each IS compound fall within the QA/QC criteria of +100% and –50% of the corresponding CCV standard? **(Y)** *(if NO, indicate project sample, non-compliant IS, %R, analytes affected-obtain from laboratory SOP)*

Project Sample ID	Non-Compliant IS	% Recovery	Analytes Affected

Action: If the internal standard is greater than the upper limit, positive results for the associated target analytes are qualified "J" and non-detects should not be qualified. If the internal standard is less than the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "UJ". If the internal standard is less than 10% of the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "R".

D. PCBs (EPA Method 8082)

Sample ID.	Inst.	Date Extracted	Date Analyzed	Time	Comments
634S-060503-1025	2	6/7	6/10	19:17	
633S-060503-1200	2	6/7	6/11	14:50	
4009-060503-EB	2	6/7	6/10	22:22	
645S-060503-1025	2	6/8	6/10	12:20	
644S-060503-1630	2	6/8	6/10	12:32	
644S-060503-EB	2	6/8	6/10	12:45	
4417-060503-1235	2	6/7	6/10	22:35	

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)** *(if NO, list non-compliant samples)*

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: If holding times were not met, positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

2. **Initial Calibration Procedures.** Were Initial Calibration Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (Percent Relative Standard Deviation (%RSD) must be less than or equal to 20%. Two single component peaks may exceed 20%, but must be less than or equal to 30%)

Inst.	Date/ Time	Target Analyte, %RSD	Associated Samples	Corrective Action
2	5/28 11:57	None		Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.

3. **Continuing Calibration Procedures.** Were Continuing Calibration Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples).* (Percent Drift (%D) must be less than or equal to 20%)

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
2	5/27 21:42	None		Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.
2	6/10 12:07	None		
2	6/10 16:24	None		
2	6/10 23:26	None		
2	6/11 13:46	None		
2	6/11 18:03	None		
2	6/12 10:26	None		
2	6/12 10:52	None		

4. **Blank Sample Analysis (Trip, Equipment, Field, Method).** Were target Aroclors identified in any Blank? **(N)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 5 times (5X) the amount in any blank.

NOTE : Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

5. **System Monitoring Compounds Recoveries.** Were surrogate compound recoveries (Tetrachloro-m-xylene, QC limit = 45-120 and Decachlorobiphenyl, QC limits=24-128 outside acceptance criteria? **(Y)** *(if YES, indicate surrogate recovery criteria, project sample ID and %R)*

Project Sample ID	SRG01 %R	SRG02 %R	Corrective Action
644S-060503-1630		22	Flag positive results with "J" and "UJ" where the target analyte was non-detect.
644S-060503-EB		18	

Action: If the surrogate percent recovery is greater than the upper acceptance limit associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the surrogate percent recovery is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "UJ". If the surrogate percent recovery is less than 10% associated target analyte positive results are qualified "J" and non-detects are qualified "R".

6. **Laboratory Control Samples (LCS), Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries.** Were percent recoveries outside acceptance criteria in either the LCS/LCSD or MS/MSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples

Action: If the LCS %R is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the LCS %R is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "R". If the MS/MSD is from a project sample use the same rules as the LCS/LCSD and apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

E. METALS (SW846 6010B, ICP-AES)

Sample ID.	Prep Batch	Date	Time	Comments
4008-060503-1600	3160094	6/9	20:17	Pb only
4009-060503-1735	3160094	6/9	20:22	Pb only
4009-060503-EB	3160094	6/9	13:33	EB-Ca 0.14 mg/L, Mg 0.072 mg/L, K 0.28 mg/L
645S-060503-1025	3160094	6/9	13:34	
644S-060503-1630	3160094	6/9	13:35	
644S-060503-EB	3160094	6/9	13:39	EB-Ca 0.14 mg/L, Mg 0.072 mg/L, K 0.27 mg/L
640S-060503-1005	3160094	6/9	13:41	
4417-060503-1235	3160094	6/9	13:42	

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)** *(if NO, list non-compliant samples)*

Non Compliant Samples

Lab ID	Sample ID	Matrix	Action

Action: If aqueous sample pH ³2, positive results are qualified "J", estimated and non-detected analytes as "R", rejected. If held > 180 days, positive results are qualified "J", estimated and non-detected analytes as "R", rejected

2. **Initial Calibration Verification (ICV) Procedures.** Were ICV Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples)*. (*Must be calibrated once every 24 hours. Acceptance criteria 70-130 %R for Antimony, Lead, and Thallium, 80-120 %R for Mercury and 90-110% R for all other metals*).

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the ICV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the ICV %R falls in the range 75-89% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the ICV %R falls in the range 111-125% results above the MDL are qualified as estimated "J", and non-detects should not be qualified. If the ICV %R is >125% results above the MDL are qualified as estimated "J", and non-detects are qualified "R". If the ICV %R is > 160% all results above the MDL are rejected "R".

3. **Continuing Calibration Verification Procedures.** Were CCV Procedures met? **(N)** *(if NO, list non-compliant instrument, target analytes and affected samples)*. (*Must be calibrated every 2 hours. Acceptance criteria 70-130 %R for Antimony, Lead, and Thallium, 80-120 %R for Mercury, and 90-110% recovery for all other metals*).

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action
ICPST	6/9 3:53	Potassium, 110.2		
	6/9 4:58	Potassium, 114.5		
	6/9 5:58	Potassium, 116.2		
	6/10 3:29	Potassium, 110.2		
	6/10 4:37	Potassium, 111.5		
	6/10 5:37	Potassium 112.0		
	6/10 6:39	Potassium, 113.9		
	6/10 7:16	Potassium, 111.8		

Action: If the ICV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the CCV %R falls in the range 75-89% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the CCV %R falls in the range 111-125% results above the MDL are qualified as estimated "J", and non-detects should not be qualified. If the CCV %R is >125% results above the MDL are qualified as estimated "J", and non-detects are qualified "R". If the CCV %R is > 160% all results above the MDL limit are rejected "R".

4. **Blank Sample Analysis (Equipment, Field, Method).** Were target Metals identified in any Blank? **(Y)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Equipment Blank 4009-060503-EB	Calcium Magnesium Potassium	0.14 mg/L 0.072 mg/L 0.28 mg/L	**4008-060503-1600** **4009-060503-1735**	1.4 mg/L 0.72 mg/L 2.8 mg/L
Equipment Blank 644S-060503-EB	Calcium Magnesium Potassium	0.14 mg/L 0.072 mg/L 0.27 mg/L	**645S-060503-1025** **644S-060503-1630** **640S-060503-1005** **4417-060503-1235**	1.4 mg/L 0.72 mg/L 2.7 mg/L
Method Blank Prep Batch 3160094	Calcium Magnesium Manganese Potassium Zinc	0.36 mg/L 0.085 mg/L 0.00094 mg/L 0.28 mg/L 0.015 mg/L		3.6 mg/L 0.85 mg/L 0.0094 mg/L 2.8 mg/L 0.15 mg/L

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the target analytes.

NOTE : Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

5. **Laboratory Control Samples (LCS).** Were percent recoveries outside acceptance criteria in either the LCS or LCSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

(Serves to monitor the overall performance of each step during the analysis, including the sample preparation. All aqueous LCS %R's must fall within the control limits of 80-120%, except for Antimony and Silver which have no fixed control limits.)

LCS ID	Target Analyte	%R	Associated Project Samples	Action

Action: For an aqueous LCS if the %R is 50-79%, qualify results ³MDL as "J" and non-detects as "UJ". If the %R is >120%, qualify results ³MDL as "J" and non-detects should not be qualified. If the %R is <50%, qualify results ³MDL as "J" and non-detects as "R". If the %R is >150%, qualify all results as "R". For the soil LCS, if the %R is > the upper limit qualify results ³MDL as "J" and non-detects should not be qualified. If the %R is < the lower limit qualify results ³MDL as "J" and non-detects as "UJ".

6. **Duplicate Sample Analysis.** Were the calculated % RPD values within the acceptance criteria (20%) for all target analytes greater than **5X** the MDL? **(Y)** *(if NO, list target analyte, RPD and affected samples)*

Sample ID	Target Analyte	RPD	Associated Samples	Recommendation
				Report average values

Action: Analytes with RPDs greater than 20% should be qualified "J" and non-detects qualified "UJ".

7. **Contract Required Detection Limit (CRDL) Standard:** Were target anlayte reporting limits (RL) below the CRDL? **(Y)** *(if NO, list target analyte, RL, CRDL and indicate reason why the RL was > the CRDL, e.g. dilution for high target compound detection)*

Standard out for Beryllium – 232.9%
Chromium-199.3%
Cobalt – 204.5%
Vanadium-191.7%

Sample ID	Target Analyte	RL	CRDL	Reason why the RL was > the CRDL

8. **Interference Check Standard (ICS):** Were all ICS recoveries +/- 20% of the true value? **(Y)** (if NO, list ICS, target analyte(s), %R and affected samples)

ICS ID	Target Analyte	%R	Affected Samples

Action: Reported Results above the RL for samples analyzed after an ICS with analytes that are outside these limits should be flagged "J" as estimated

9. **Spiked Sample Analysis.** Were percent recoveries outside acceptance criteria in either the MS/MSD? **(Y)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
Lab MS	Aluminum Arsenic Iron	75-125 75-125 75-125	139,127 73,74 153	None

Action: If the MS %R is <30%, results > the MDL are qualified as "J" and non-detects as "R. If the MS %R is 30-74%, results > the MDL are qualified as "J" and non-detects as "UJ. If the MS %R is >125%, results > the MDL are qualified as "J" and non-detects should not be qualified. If the MS/MSD is from a project sample apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

10. **Serial Dilution %D:** Were the calculated % D values within the acceptance criteria (10%) for all target analytes greater than **50X** the MDL? **(Y)** *(if NO, list target analyte, %D and affected samples)*

Performed on another client's sample.

Sample ID	Target Analyte	Serial Dilution (% D)	Associated Samples	Recommendation
				Qualify results greater than the MDL as estimated "J", and non-detects as estimated "UJ".

Action: For serial dilution %D results >10%, qualify results > the MDL as "J" and non-detects as "UJ".

F. GENERAL CHEMISTRY

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)** *(if NO, list non-compliant samples)*

Non Compliant Samples

Sample ID	Target Analyte	Holding Time Required	Holding Time Achieved	Action Required

Action: If aqueous CN sample pH <14, positive results are estimated "J" and non-detects qualified "R". If held > 14days, positive results are qualified "J", and non-detects are qualified "R".

2. **Initial Calibration Verification (ICV) Procedures.** Were ICV Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples)*. (*Must be calibrated once every 24 hours. Acceptance criteria 70-130 %R for Antimony, Lead, and Thallium, 80-120 %R for Mercury and 90-110% R for all other metals*).

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the ICV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the ICV %R falls in the range 75-80% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the ICV %R is >125% results above the MDL are qualified as estimated "J". If the ICV %R is > 150% all results are rejected "R".

3. **Continuing Calibration Verification Procedures.** Were CCV Procedures met? **(Y)** *(if NO, list non-compliant instrument, target analytes and affected samples)*. (*Must be calibrated every 2 hours. Acceptance criteria 70-130 %R for Antimony, Lead, and Thallium, 80-120 %R for Mercury, and 90-110% recovery for all other metals*).

Inst.	Date/ Time	Target Analyte, %R	Associated Samples	Corrective Action

Action: If the CCV %r is <75%, qualify all non-detects as rejected "R", results greater than the MDL are qualified as estimated "J". If the CCV %R falls in the range 75-80% results above the MDL are qualified as estimated "J", and non-detects are qualified "UJ". If the CCV %R is >125% results above the MDL are qualified as estimated "J", and non-detects are qualified "R". If the CCV %R is > 150% all results above the MDL are rejected "R".

4. **Blank Sample Analysis (Equipment, Field, Method).** Were target Metals identified in any Blank? **(N)** *(if YES, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 5 times (5X) the amount in any blank for the target analytes.

NOTE : Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

5. **Laboratory Control Samples (LCS).** Were percent recoveries outside acceptance criteria in either the LCS or LCSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)* (Serves to monitor the overall performance of the analysis, including the sample preparation. All LCS %R must fall within the control limits of 80-120%.)

LCS ID	Target Analyte	%R	Associated Project Samples	Action

Action: If the %R is 50-79%, qualify results ³MDL as "J" and non-detects as "UJ". If the %R is >120%, qualify results ³MDL as "J" and non-detects should not be qualified. If the %R is <50%, qualify results ³MDL as "J" and non-detects as "R". If the %R is >150%, qualify all results as "R".

6. **Matrix Spike Samples:** Were percent recoveries outside acceptance criteria in either the MS or MSD? **(N)** *(if YES, indicate project sample, target analyte, %R criteria, and affected samples)*Evaluates the effect of the sample matrix on the accuracy of the analyte analysis.

MS/MSD ID	Target Analyte	%R	Associated Project Samples	Action
Lab MS	**Hexavalent Chromium (Recovery limits=34-136)**	20 19	None	

Action: If the MS %R is <30%, results > the MDL are qualified as "J" and non-detects as "UJ. If the MS %R is 30-74%, results > the MDL are qualified as "J" and non-detects as "UJ. If the MS %R is >125% results, > the MDL are qualified as "J" and non-detects should not be qualified. If the MS/MSD is from a project sample apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

7. **Sample Duplicate:** Were the calculated % RPD values within the acceptance criteria (20%) for all target analytes greater than **5X** the MDL? **(Y)** *(if NO, list target analyte, RPD and affected samples)*

Sample ID	Target Analyte	RPD	Associated Samples	Recommendation
				Qualify results greater than the MDL as estimated "J", and non-detects as estimated "UJ".

Action: Analytes with RPDs greater than 20% for values greater than 5X the RL should be qualified "J" and non-detects "UJ".

Data Usability Report (DUR)
Delphi, Dort Highway – June 2003 Sampling Event
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Group # 3F07177

Analytical results for thirteen (13) aqueous samples and four (4) quality control samples were reviewed to evaluate the data usability. These data were assessed in accordance with guidance from the United States Environmental Protection Agency (USEPA) **National Functional Guidelines for Organic Data Review** (EPA 540-R-99/008), **National Functional Guidelines for Inorganic Data Review, Final** (EPA 540-R-01-008), and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996.

This DUR pertains to the following samples:

Lab Lot No.: A3F070177	Lab Lot No.: A3F070181	Lab Lot No.: A3070182	Lab Lot No.: A3F070184
626M-060603-TB	630D-060603-TB	418-060603-TB	631S-060603-0950
626M-060603-0955	630D-060603-0955	418-060603-0948	631M-060603-1155
626D-060603-1210	630M-060603-1230		631S-060603-TB
626S-060603-1430	629S-060603-1545		631D-060603-1455
606D-060603-1700	629D-060603-1810		608D-060603-1700

Project samples were analyzed according to the following analytical methods:

Parameter	Analytical Method	Holding Time Criteria
Cyanide, Total	SW846 9012A	14 Days
Mercury in Liquid Waste (Manual Cold Vapor)	SW846 7470A	28 Days
Polychlorinated Biphenyls	SW846 8082	7 Days Ext./40 Days Post Ext.
Semi-volatile Organic Compounds by GC/MS	SW846 8270C	7 Days Ext./40 Days Post Ext.
Trace Inductively Coupled Plasma Metals	SW846 6010B	6 months
Volatile Organic Compounds by GC/MS	SW846 8260B	14 Days

References:

SW846 – "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", 3rd Edition, November 1986 and its updates.

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- Holding Times
- GC/MS Instrument Performance Check
- Initial Calibration Procedures
- Continuing Calibration Procedures
- Blank Sample Analysis
- System Monitoring Compound Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Internal Standard Recoveries
- ICP Interference Check Sample Performance
- ICP Serial Dilution Replicate Percent Difference
- Sample Data Reporting Format
- Data Qualifiers
- Summary

Holding Times

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group. No qualification of the data is recommended.

GC/MS Instrument Performance Check

GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. No qualification of the data is recommended.

Initial Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s).

During the analysis of volatile organic compounds (EPA Method SW846 8260B), the initial calibration standards for the following target compound(s) exhibited a relative percent deviation (%RSD) greater than the acceptance criteria of 30%:

Inst.	Date/ Time	Target Analyte, %RSD	Associated Samples	Corrective Action
7	5/27/03 11:46	Trichloroethene, 32.318	626M-060603-TB 626M-060603-0955 626D-060603-1210 626S-060603-1430 630D-060603-TB 630D-060603-0955 630M-060603-1230 629S-060603-1545 629D-060603-1810 418-060603-TB 418-060603-0948 631S-060603-0950 631M-060603-1155 631S-060603-TB 631D-060603-1455	Qualify positive results as “J”, estimated and non-detected analytes as “UJ”, estimated detection limit.

During the analysis of semi-volatile organic compounds (EPA Method SW846 8270C), the initial calibration standards for the following target compound(s) exhibited a relative percent deviation (%RSD) greater than the acceptance criteria of 30%:

Inst.	Date/ Time	Target Analyte, %RSD	Associated Samples	Corrective Action
9	6/5/03 09:03	2,4 Dinitrophenol, 31.30	418-060603-0948	Qualify positive results as “J”, estimated and non-detected analytes as “UJ”, estimated undetected.

Continuing Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of volatile organic compounds (EPA Method SW846 8260B), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 25%:

Inst.	Date	Target Analyte, %D	Associated Samples	Corrective Action
7	6/11/03 08:31	Acetone, -43.1 2-Butanone, -31.5 2-Hexanone, -29.5 Bromoform, 51.6	626M-060603-TB 630D-060603-TB 629S-060603-1545 418-060603-TB 418-060603-0948 631S-060603-0950 631M-060603-1155 631S-060603-TB 631D-060603-1455	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated detection limit.
7	6/11/03 19:45	Acetone, -27.4 Bromoform, 52.8	626M-060603-TB 630D-060603-TB 629S-060603-1545 418-060603-TB 418-060603-0948 631S-060603-0950 631M-060603-1155 631S-060603-TB 631D-060603-1455	
7	6/12/03 08:36	Acetone, -42.5 2-Butanone, -31.1 2-Hexanone, -35.9 Bromoform, 51.0 1,2,4-Trichlorobenzene, -30.1	626M-060603-0955 626D-060603-1210 626S-060603-1430 630D-060603-0955 630M-060603-1230 629D-060603-1810	

Blank Sample Analysis

In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for metals and the common laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds. Target compounds were not detected in associated blank samples (trip, equipment, method) prepared and analyzed concurrently with the project samples, with the following exception(s):

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Trip Blank 626M-060603-TB	Acetone 2-Butanone	2.5 µg/L 1.1 µg/L	626M-060603-0955 626D-060603-1210 626S-060603-1430 606D-060603-1700	25 µg/L 11 µg/L

Trip Blank 630D-060603-TB	Acetone 2-Butanone	2.6 µg/L 1.1 µg/L	630D-060603-0955 630M-060603-1230 629S-060603-1545 629D-060603-1810	26 µg/L 11 µg/L
Trip Blank 418-060603-TB	Acetone 2-Butanone	2.5 µg/L 1.1 µg/L	418-060603-0948	25 µg/L 11 µg/L
Trip Blank 631S-060603-TB	Acetone 2-Butanone	2.9 µg/L 1.0 µg/L	631S-060603-0950 631M-060603-1155 631D-060603-1455 608D-060603-1700	29 µg/L 10 µg/L
Method Blank, I9 6/11/03, 11:06	Bis (2-Ethylhexyl) phthalate	1.7 µg/L	418-060603-0948	17 µg/L
Method Blank Prep Batch 3160094	Calcium Magnesium Manganese Potassium Zinc	0.36 mg/L 0.085 mg/L 0.00094 mg/L 0.28 mg/L 0.015 mg/L	606D-060603-1700 418-060603-0948 631D-060603-1455 608D-060603-1700	3.6 mg/L 0.85 mg/L 0.0094 mg/L 2.8 mg/L 0.15 mg/L

System Monitoring Compound Recoveries

System monitoring/surrogate compounds were added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C and 8082 to confirm the efficiency of the sample preparation procedures. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. The calculated recovery of these compounds fell within the laboratory specific quality control criteria, with the exception(s) noted below. In a few instances, sample extracts required dilution prior to analysis in an effort by the laboratory to either improve instrument performance by minimizing matrix interference or enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results of the surrogate compounds with "DIL" indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. In each case, the elevated reporting limits were confirmed for the level of dilution.

During the analysis of polychlorinated biphenyls, the percent recovery for the surrogate decachlorobiphenyl fell below the lower acceptance limit, but above 10%, for sample 418-060603-0948. Therefore, positive results for the target analytes – Aroclor 1242, Aroclor 1248, Aroclor 1254 and Aroclor 1260- should be qualified as "J", estimated and non-detects as "UJ", estimated detection limit.

Laboratory Control Samples (LCS), Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS/MSD and LCS analyses fell within the laboratory QA acceptance criteria. No Qualification of the data is recommended.

Internal Standard Recoveries

Internal Standard compounds were added to each sample matrix prior to the analysis of organic parameters by EPA Methods 8260B and 8270C to quantify the amount of the target compounds detected within each sample. The calculated response of each IS compound fell within the QA/QC criteria of +100% and – 50% of the corresponding CCV standard. No qualification if the data is recommended.

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were all within the acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. No qualification of the data is recommended.

ICP Serial Dilution Replicate Percent Difference

The results of the ICP Serial Dilution samples analyzed concurrently with the project samples were within compliance with the USEPA protocol criteria of less than 10% replicate percent difference (RPD) for analytes reported above the IDL in both the diluted and un-diluted sample. No qualification of the data is recommended.

Sample Data Reporting Format

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format including Forms I through IX. The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting limit values for the diluted analyses were adjusted for the level of dilution performed and the percent moisture content in solid matrices. The reporting format is complete and compliant with the objectives of the project, no corrective action is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target compounds detected below the reporting limit but above the method detection limit, and/or when target compounds were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of these data is 100% with the few exceptions noted above.

Project Name: SDG# A3J010135

A. SAMPLE RECIEPT/ CHAIN OF CUSTODY

1. Samples were collected on 09/30/03 and received at the laboratory on 10/01/03
Sample cooler was received at temperature(s) of 3.4°C, with wet ice present.

	Parameter	Analytical Method	Holding Time Criteria
☒	Extractable Petroleum Hydrocarbons	SW846 8015B	14 Days
☒	Polychlorinated Biphenyls by SW-846 8082	SW846 8082	7 Days Ext/40 Days Post Ext.
☒	Semi-volatile Organic Compounds by GC/MS	SW846 8270C	7 Days Ext/40 Days Post Ext.
☒	Total Residue as Percent Solids	MCAWW 160.3 MOD	7 Days
☒	Trace Inductively Coupled Plasma (ICP) Metals	SW846 6010B	6 months
☒	Volatile Organic Compounds by GC/MS	SW846 8260B	14 Days
☒	8270C (SIM)	SW846 8270C SIM	7 Days Ext/40 Days Post Ext.

List all project samples in table below. *Identify field QC samples and potential problem samples.*

Lab ID	Sample ID	Matrix	Comments
A3J010135-001	**4005-093003-1110**	AQ	
A3J010135-002	**4626M-093003-1245**	AQ	
A3J010135-003	**4626M-093003-1300**	LO	
A3J010135-004	**4626M-093003-TB**	AQ	Trip Blank
A3J010135-005	**4645S-093003-1515**	LO	
A3J010135-006	**H171-093003-1220**	S	
A3J010135-007	**H172-093003-1415**	S	
A3J010135-008	**H173-093003-1520**	S	
A3J010135-009	**H174-093003-1620**	S	
A3J010135-010	**H175-093003-1700**	S	

2. Case Narrative Issues & Miscellaneous Comments.
SVOCS – Sample 464S-093003-1515 had elevated reporting limits due to matrix interferences.
PCB-8082 4645S-093003-1515 the recovery for one of two surrogate compounds is outside acceptance criteria, so no corrective action was required.
Metals – No ICP Form IX was provided for batch 3275104. The serial dilution was performed on a different sample from the same QC batch(es).

B. VOCs (EPA Method 8260B)

Sample ID.	Inst.	Date	Time	Comments
4626M-093003-1245	10	10/02/03	08:44	
4626M-093003-1300	10	10/02/03	14:44	
4626M-093003-TB	11	10/01/03	19:23	TB – 2-Butanone 1.0 ppb, TCE 0.32 ppb
4645S-093003-1515	10	10/02/03	14:22	

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)**☒ / **(N)** ☐ *(if NO, list non-compliant samples)*

2. **GC/MS Instrument Performance Check.** GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. **(Y)** ☒ / **(N)** ☐ *(if NO, list non compliant instrument/affected samples)*

3. **Initial Calibration Procedures.** Were Initial Calibration Procedures met? **(Y)** ☐ / **(N)** ☒ *(if NO, list non-compliant instrument, target analytes and affected samples)*. (Percent Relative Standard Deviation (%RSD) must be less than or equal to 30%)

Inst.	Date/ Time	Target Analyte, %RSD	Associated Samples	Corrective Action
10	08/20 17:04	Methylene Chloride, 31.445	4626M-093003-1245 4626M-093003-1300 4645S-093003-1515	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.

4. **Continuing Calibration Procedures.** Were Continuing Calibration Procedures met? **(Y)** ☐ / **(N)** ☒ *(if NO, list non-compliant instrument, target analytes and affected samples)*. (Percent Drift (%D) must be less than or equal to 25%)

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
10	10/01 22:57	Acetone, 32.5 Dichlorodifluoromethane, 40.3 Trichlorofluoromethane, -34.8	4626M-093003-1245	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
10	10/02 09:30	Acetone, 28.2 Dichlorodifluoromethane, 31.4 Trichlorofluoromethane, 38.5 Methyl Acetate, 25.3	4626M-093003-1300 4645S-093003-1515	
11	10/01 08:35	2-Hexanone, 32.8 Acetone, 39.5 2-Butanone, 34.9	4626M-093003-TB	

5. **Blank Sample Analysis (Trip, Equipment, Field, Method).** Were Blank samples free of target VOCs? **(Y)** ☐ / **(N)** ☒ *(if NO, list type of blank, target analyte concentration and affected samples)*

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Trip Blank, 4626M-093003-TB	2-Butanone Trichloroethene	1.0 µg/L 0.32µg/L	4626M-093003-1245 4626M-093003-1300 4645S-093003-1515	10.0 µg/L 1.6µg/L
Method Blank, I-10 10/02 00:05	1,2,4 –Trichlorobenzene	0.26 µg/L	4626M-093003-1245 4626M-093003-1300 4645S-093003-1515	1.3 µg/L
Method Blank, I-10 10/02, 14:00	Acetone 2-Butanone 1,2,4—Trichlorobenzene	960 µg/kg 730 µg/kg 260 µg/kg	4626M-093003-1245 4626M-093003-1300 4645S-093003-1515	9600 µg/kg 7300 µg/kg 1300 µg/kg
Method Blank, I-11 10/01, 10:08	Bromomethane	0.28 µg/L	4626M-093003-TB	1.4 µg/L

Action: In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the common laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane), or 5 times (5X) the amount for other target compounds.

NOTE :Trip blank associated samples include all samples shipped within the same sample cooler. Equipment Blank associated samples include samples collected using the sample methods on the same day. Method blank associated samples include all samples analyzed within the sample analytical batch.

6. **System Monitoring Compounds Recoveries.** Were surrogate compound recoveries within acceptance criteria specified by the laboratory? **(Y)** ☒ / **(N)** ☐ *(if NO, indicate surrogate recovery criteria, project sample ID and %R)*

Surrogate Percent Recovery Criteria			
Surrogate		**Aqueous Matrix**	**Solid Matrix**
Dibromofluoromethane	SRG01	73-122	59-138
1,2-Dichloroethane-d4	SRG02	61-128	61-130
Toluene-d8	SRG03	76-110	60-143
4-Bromofluorobenzene	SRG04	74-116	47-158

Action: If the surrogate percent recovery is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the surrogate percent recovery is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "UJ". If the surrogate percent recovery is less than 10% associated target analyte positive results are qualified "J" and non-detects are qualified "R".

7. **Laboratory Control Samples (LCS), Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries.** Were percent recoveries within acceptance criteria in either the LCS/LCSD or MS/MSD? **(Y)** ☒ / **(N)** ☐ *(if NO, indicate project sample, target analyte, %R criteria, and affected samples)*
8. **Internal Standard Recoveries.** Did the calculated response of each IS compound fall within the QA/QC criteria of +100% and –50% of the corresponding CCV standard? **(Y)** ☒ / **(N)** ☐ *(if NO, indicate project sample, non-compliant IS, %R, analytes affected-obtain from laboratory SOP)*

C. SVOCs (EPA Method 8270C)

Sample ID.	Inst.	Date Extracted	Date Analyzed	Time	Comments
1005-093003-1110	8	10/01/03	10/02/03	18:22	8270 SIM
645S-093003-1515	9	10/01/03	10/02/03	18:31	

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)** ☒ / **(N)** ☐ *(if NO, list non-compliant samples)*

.

2. **GC/MS Instrument Performance Check.** GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. **(Y)** ☒ / **(N)** ☐ *(if NO, list non compliant instrument/affected samples)*

3. **Initial Calibration Procedures.** Were Initial Calibration Procedures met? **(Y)** ☐ / **(N)** ☒ *(if NO, list non-compliant instrument, target analytes and affected samples)*. (Percent Relative Standard Deviation (%RSD) must be less than or equal to 30%)

Inst.	Date/ Time	Target Analyte, %RSD	Associated Samples	Corrective Action
9	10/01 13:04	Hexachlorocyclopentadiene, 38.689	645S-093003-1515	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.

4. **Continuing Calibration Procedures.** Were Continuing Calibration Procedures met? **(Y)** ☒ / **(N)** ☐ *(if NO, list non-compliant instrument, target analytes and affected samples)*. (Percent Drift (%D) must be less than or equal to 25%)

5. **Blank Sample Analysis (Trip, Equipment, Field, Method).** Were Blank samples free of target SVOCs? **(Y)** ☒ / **(N)** ☐ *(if NO, list type of blank, target analyte concentration and affected samples)*

6. **System Monitoring Compounds Recoveries.** Were surrogate compound recoveries within acceptance criteria specified by the laboratory? **(Y)** ☒ / **(N)** ☐ *(if NO, indicate surrogate recovery criteria, project sample ID and %R)*

Surrogate Percent Recovery Criteria		
Surrogate	**Aqueous Matrix**	**Solid Matrix**

Nitrobenzene-d5	SRG01	44-128	42-110
2-Fluorobiphenyl	SRG02	38-115	43-110
Terphenyl-d14	SRG03	41-142	37-137
Phenol-d5	SRG04	10-146	25-115
2-Fluorophenol	SRG05	11-136	11-116
2,4,6-Tribromophenol	SRG06	17-135	35-116

Action: If 2 or more surrogates in either semivolatile fraction (base/neutral or acid fraction)have percent recoveries greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If 2 or more surrogates in either semivolatile fraction (base/neutral or acid fraction) have percent recoveries less than the lower acceptance limit, associated target analyte positive results are qualified "J" and non-detects are qualified "UJ". If 2 or more surrogates in either semivolatile fraction (base/neutral or acid fraction) have percent recoveries is less than 10%, associated target analyte positive results are qualified "J" and non-detects are qualified "R".

7. **Laboratory Control Samples (LCS), Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries.** Were percent recoveries within acceptance criteria in either the LCS/LCSD or MS/MSD? **(Y)** ☒ / **(N)** ☐ *(if NO, indicate project sample, target analyte, %R criteria, and affected samples)*

8. **Internal Standard Recoveries.** Did the calculated response of each IS compound fall within the QA/QC criteria of +100% and –50% of the corresponding CCV standard? **(Y)** ☒ / **(N)** ☐ *(if NO, indicate project sample, non-compliant IS, %R, analytes affected-obtain from laboratory SOP)*

D. PCBs (EPA Method 8082)

Sample ID.	Inst.	Date Extracted	Date Analyzed	Time	Comments
4645S-093003-1515	4	10/06/03	10/07/03	08:16	

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)** ☒ / **(N)** ☐ *(if NO, list non-compliant samples)*

2. **Initial Calibration Procedures.** Were Initial Calibration Procedures met? **(Y)** ☐ / **(N)** ☒ *(if NO, list non-compliant instrument, target analytes and affected samples)*. (Percent Relative Standard Deviation (%RSD) must be less than or equal to 20%. Two single component peaks may exceed 20%, but must be less than or equal to 30%)

Inst.	Date/ Time	Target Analyte, %RSD	Associated Samples	Corrective Action
4	08/29 10:53	2 Aroclor-1221 (1) 20.649 (2) 21.396 (3) 19.337	4645S-093003-1515	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.

3. **Continuing Calibration Procedures.** Were Continuing Calibration Procedures met? **(Y)** ☒ / **(N)** ☐ *(if NO, list non-compliant instrument, target analytes and affected samples)*. (Percent Drift (%D) must be less than or equal to 20%)

4. **Blank Sample Analysis (Trip, Equipment, Field, Method).** Were Blank sample free of target Aroclors? **(Y)** ☒ / **(N)** ☐ *(if NO, list type of blank, target analyte concentration and affected samples).*

5. **System Monitoring Compounds Recoveries.** Were surrogate compound recoveries (Tetrachloro-m-xylene and Decachlorobiphenyl) within acceptance criteria of 31-127 and 23-141 respectively R? **(Y)** ☐ /**(N)** ☒ *(if NO, indicate surrogate recovery criteria, project sample ID and %R)*

Project Sample ID	SRG01 %R	SRG02 %R	Corrective Action

4645S-093003-1515	83	**18**	Associated target analyte positive results for Aroclors 1242, 1248, 1254 and 1260 are qualified as "J" estimated and non-detects are qualified "U" estimated reporting limit. Results for Aroclor 1016, 1221, and 1232 should not be qualified.

Action: If the surrogate percent recovery is greater than the upper acceptance limit associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the surrogate percent recovery is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "UJ". If the surrogate percent recovery is less than 10% associated target analyte positive results are qualified "J" and non-detects are qualified "R".

8. **Laboratory Control Samples (LCS), Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries.** Were percent recoveries within acceptance criteria in either the LCS/LCSD or MS/MSD? **(Y)** ☒ / **(N)** ☐ *(if NO, indicate project sample, target analyte, %R criteria, and affected samples)*

E. TPH Extractable Data (SW846 8015B)

Sample ID.	Inst.	Date Extracted	Date Analyzed	Time	Comments
645S-093003-1515	6	10/01/03	10/03/03	11:26	

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)** ☒ / **(N)** ☐ *(if NO, list non-compliant samples)*

2. **GC/MS Instrument Performance Check.** GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. **(Y)** ☒ / **(N)** ☐ *(if NO, list non compliant instrument/affected samples)*

3. **Initial Calibration Procedures.** Were Initial Calibration Procedures met? **(Y)** ☒ / **(N)** ☐ *(if NO, list non-compliant instrument, target analytes and affected samples).* (Percent Relative Standard Deviation (%RSD) must be less than or equal to 30%)

4. **Continuing Calibration Procedures.** Were Continuing Calibration Procedures met? **(Y)** ☒ / **(N)** ☐ *(if NO, list non-compliant instrument, target analytes and affected samples).* (Percent Drift (%D) must be less than or equal to 25%)

5. **Blank Sample Analysis (Trip, Equipment, Field, Method).** Were Blank samples free of target SVOCs? **(Y)** ☒ / **(N)** ☐ *(if NO, list type of blank, target analyte concentration and affected samples)*

6. **System Monitoring Compounds Recoveries.** Were surrogate compound recoveries within acceptance criteria specified by the laboratory? **(Y)** ☒ / **(N)** ☐ *(if NO, indicate surrogate recovery criteria, project sample ID and %R)*

7. **Laboratory Control Samples (LCS), Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries.** Were percent recoveries within acceptance criteria in either the LCS/LCSD or MS/MSD? **(Y)** ☒ / **(N)** ☐ *(if NO, indicate project sample, target analyte, %R criteria, and affected samples)*

8. **Internal Standard Recoveries.** Did the calculated response of each IS compound fall within the QA/QC criteria of +100% and –50% of the corresponding CCV standard? **(Y)** ☒ / **(N)** ☐ *(if NO, indicate project sample, non-compliant IS, %R, analytes affected-obtain from laboratory SOP)* **Not Applicable.**

E. METALS (SW846 6010B, ICP-AES)

Sample ID.	Prep Batch	Date	Time	Comments
H171-093003-1220	3275104	10/02	18:43	
H172-093003-1415	3275104	10/02	18:48	
H173-093003-1520	3275104	10/02	18:53	
H174-093003-1620	3275104	10/02	19:13	
H175-093003-1700	3275104	10/02	19:18	

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)** ☒ / **(N)** ☐ *(if NO, list non-compliant samples)*

2. **Initial Calibration Verification (ICV) Procedures.** Were ICV Procedures met? **(Y)** ☒ / **(N)** ☐ *(if NO, list non-compliant instrument, target analytes and affected samples).* (*Must be calibrated once every 24 hours. Acceptance criteria 70-130 %R for Antimony, Lead, and Thallium, 80-120 %R for Mercury and 90-110% R for all other metals*).

3. **Continuing Calibration Verification Procedures.** Were CCV Procedures met? **(Y)** ☒ / **(N)** ☐ *(if NO, list non-compliant instrument, target analytes and affected samples).* (*Must be calibrated every 2 hours. Acceptance criteria 70-130 %R for Antimony, Lead, and Thallium, 80-120 %R for Mercury, and 90-110% recovery for all other metals*).

4. **Blank Sample Analysis (Equipment, Field, Method).** Were Blank samples free of target Metals? **(Y)** ☒ / **(N)** ☐ *(if NO, list type of blank, target analyte concentration and affected samples)*

5. **Laboratory Control Samples (LCS). .** Were percent recoveries within acceptance criteria in either the LCS or LCSD? **(Y)** ☒ / **(N)** ☐ *(if NO, indicate project sample, target analyte, %R criteria, and affected samples)*

6. **Duplicate Sample Analysis.** Were the calculated % RPD values within the acceptance criteria (20%) for all target analytes greater than **5X** the MDL? **(Y)** ☒ / **(N)** ☐ *(if NO, list target analyte, RPD and affected samples).*

7. **Contract Required Detection Limit (CRDL) Standard:** Were target anlayte reporting limits (RL) below the CRDL? **(Y)** ☒ / **(N)** ☐ *(if NO, list target analyte, RL, CRDL and indicate reason why the RL was > the CRDL, e.g. dilution for high target compound detection)*

8. **Interference Check Standard (ICS):** Were all ICS recoveries +/- 20% of the true value? **(Y)** ☒ / **(N)** ☐ (if NO, list ICS, target analyte(s), %R and affected samples)

9. **Spiked Sample Analysis.** Were percent recoveries within acceptance criteria in either the MS/MSD? **(Y)** ☒ / **(N)** ☐ *(if NO, indicate project sample, target analyte, %R criteria, and affected samples)*

10. **Serial Dilution %D:** Were the calculated % D values within the acceptance criteria (10%) for all target analytes greater than **50X** the MDL? **(Y)** ☒ / **(N)** ☐ *(if NO, list target analyte, %D and affected samples)* No serial dilution was performed on a different sample from the QC batch(es).

F. GENERAL CHEMISTRY

1. **Holding Times.** Were holding times met, measured from the time of sample collection to the time of sample preparation or analysis ? **(Y)** ☒ / **(N)** ☐ *(if NO, list non-compliant samples)*

2. **Initial Calibration Verification (ICV) Procedures.** Were ICV Procedures met? **(Y)** ☒ / **(N)** ☐ *(if NO, list non-compliant instrument, target analytes and affected samples).*

3. **Continuing Calibration Verification Procedures.** Were CCV Procedures met? **(Y)** ☒ / **(N)** ☐ NOT APPLICABLE *(if NO, list non-compliant instrument, target analytes and affected samples).*

4. **Blank Sample Analysis (Equipment, Field, Method).** Were Blank samples free of target analytes? **(Y)** ☒ / **(N)** ☐ *(if NO, list type of blank, target analyte concentration and affected samples)*

5. **Laboratory Control Samples (LCS).** Were percent recoveries within acceptance criteria in either the LCS or LCSD? **(Y)** ☒ / **(N)** ☐ *(if NO, indicate project sample, target analyte, %R criteria, and affected samples)* (Serves to monitor the overall performance of the analysis, including the sample preparation. All LCS %R must fall within the control limits of 80-120%.)

6. **Matrix Spike Samples:** Were percent recoveries within acceptance criteria in either the MS or MSD? **(Y)** ☒ / **(N)** ☐ *(if NO, indicate project sample, target analyte, %R criteria, and affected samples)*Evaluates the effect of the sample matrix on the accuracy of the analyte analysis.

7. **Sample Duplicate:** Were the calculated % RPD values within the acceptance criteria (20%) for all target analytes greater than **5X** the MDL? **(Y)** ☒ / **(N)** ☐ *(if NO, list target analyte, RPD and affected samples)*

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Data Usability Summary Report (DUSR)
Delphi - Dort (MI)
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Group # 4C16124

Analytical results for project samples were reviewed to evaluate the data usability. Data was assessed in accordance with guidance from the following United States Environmental Protection Agency (USEPA) documents:

and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996. This DUSR pertains to the following samples:

Sample ID	Sample ID
GP4235-031504-1230	GP4244-031704-1015
0894-031504-0001	GP4243-031704-1200
0894-031504-0002	GP4239-031704-1500
0894-031504-0003	GP4231-031704-1630
0894-031504-0004	GP4232-031704-1745
GP4236-031504-1500	
GP4241-031604-1045	
0894-031604-0001	
GP4240-031604-1200	
GP4245-031604-1430	
GP4234-031604-1545	
GP4242-031604-1645	
0894-031704-0001	

Project Samples were analyzed according to the following analytical methods:

	Parameter	Analytical Method	Holding Time Criteria
1.	Volatile Organic Compounds by GC/MS (preserved)	SW846 8260B	14 Days

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- Holding Times
- GC/MS Instrument Performance Check
- Initial Calibration Procedures
- Continuing Calibration Procedures
- Blank Sample Analysis
- System Monitoring Compound Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Internal Standard Recoveries
- Sample Data Reporting Format
- Data Qualifiers
- Summary

Preservation and Holding Times

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group. No qualification of the data is recommended.

GC/MS Instrument Performance Check

GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. No qualification of the data is recommended.

Initial Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of volatile organic compounds (SW846 8260B), the initial calibration standards for the following target compound(s) exhibited a percent relative standard deviation (%RSD) greater than the acceptance criteria of 30%:

Inst.	Date / Time	Target Analyte	%RSD	RRF	Associated Samples	Corrective Action
12	3/15/04 1642	Acetone	37.797	0.14941	GP4241-031604-1045 0894-031604-0001 GP4240-031604-1200 GP4245-031604-1430 GP4234-031604-1545 GP4242-031604-1645	See Action #1 Below

Action #1
Positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

Continuing Calibration Procedures

Continuing calibration verification (CCV) procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of volatile organic compounds (SW846 8260B), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 25%:

Inst.	Date / Time	Target Analyte	%D	RRF	Associated Samples	Corrective Action
10	3/18/04 1007	Bromomethane	37.1	50	GP4232-031704-1745	See Action #1 Below
		Acetone	35.7	0.16752		See Action #1 Below
		Trichlorofluoromethane	30.5	50		See Action #1 Below
		Methyl tert-butyl ether	31.6	0.87991		See Action #1 Below
11	3/16/04 0934	Dichlorodifluoromethane	28.5	0.07827	GP4235-031504-1230 0894-031504-0001 0894-031504-0002 0894-031504-0003 0894-031504-0004 GP4236-031504-1500	See Action #1 Below
12	3/17/04 1731	Acetone	28.1	100	GP4241-031604-1045 0894-031604-0001 GP4240-031604-1200 GP4245-031604-1430 GP4234-031604-1545 GP4242-031604-1645	See Action #1 Below
		trans-1,2-Dichloroethene	37.9	50		See Action #1 Below

Action #1
Positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

Blank Sample Analysis

In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for metals and the common organic laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds. Target compounds were not detected in associated blank samples (trip, equipment, method) prepared and analyzed concurrently with the project samples, with the following exception(s):

Blank	Target Analyte	Concn.	Associated Samples	Flag sample results
Trip Blank	Acetone	2.8 ug/L	GP4235-031504-1230	28 ug/L
0894-031504-0001	2-Butanone	1.4 ug/L	0894-031504-0002	14 ug/L

			0894-031504-0003 0894-031504-0004 GP4236-031504-1500	
Trip Blank 0894-031604-0001	Acetone 2-Butanone	1.6 ug/L 1.4 ug/L	GP4241-031604-1045 GP4240-031604-1200 GP4245-031604-1430 GP4234-031604-1545 GP4242-031604-1645	16 ug/L 14 ug/L
Trip Blank 0894-031704-0001	Acetone Toluene 1,2,4-Trichlorobenzene	1.7 ug/L 0.2 ug/L 0.32 ug/L	GP4244-031704-1015 GP4243-031704-1200 GP4239-031704-1500 GP4231-031704-1630 GP4232-031704-1745	17 ug/L 1 ug/L 1.6 ug/L
Method Blank I7, 3/18/04, 0913	Acetone 1,2,4-Trichlorobenzene	0.73 ug/L 0.29 ug/L	0894-031704-0001 GP4244-031704-1015 GP4243-031704-1200 GP4239-031704-1500 GP4231-031704-1630	7.3 ug/L 1.45 ug/L
Method Blank I11, 3/16/04, 1107	Acetone Methylene chloride	0.87 ug/L 0.46 ug/L	GP4235-031504-1230 0894-031504-0001 0894-031504-0002 0894-031504-0003 0894-031504-0004 GP4236-031504-1500	8.7 ug/L 4.6 ug/L

System Monitoring Compound Recoveries

System monitoring/surrogate compounds aree added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C, or 8082 to confirm the efficiency of the sample preparation procedure. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. The calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts required dilution prior to analysis to either improve instrument performance by minimizing matrix interference or enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results of the surrogate compounds with “DIL” indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. No qualification of the data is recommended.

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS/MSD and LCS analyses fell within the laboratory QA acceptance criteria. No qualification of the data is recommended.

Internal Standard Recoveries

Internal Standard compounds were added to each sample matrix prior to the analysis of organic parameters by EPA Methods 8260B and/or 8270C to quantify the amount of the target compounds detected within each sample. The calculated response of each IS compound fell within the QA/QC criteria of +100% and – 50% of the corresponding CCV standard. No qualification of the data is recommended.

Sample Data Reporting Format

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format. The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting format is complete and compliant with the objectives of the project. No qualification of the data is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target compounds detected below the reporting limit but above the method detection limit, and/or when target compounds were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Organic analyses samples that contained concentrations of target analytes at a reportable level in the associated method blanks were flagged by the laboratory with a “B”. If the target analyte concentration was greater than 10 times (10X) the amount in any blank for the common laboratory contaminants or 5 times (5X) the amount for other target compounds, the “B” qualifier was not carried forward for database input; if less than the 10X or 5X rule the “B” qualifier was replaced with a “U”. The “J” qualifier, which indicates an estimated value because the result was between the MDL and RL was carried through to the database.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of the data is 100% with the few exceptions noted above.

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Data Usability Summary Report (DUSR)
Delphi - Dort (MI)
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Group # 4C16267

Analytical results for the project samples were reviewed to evaluate the data usability. Data was assessed in accordance with guidance from the following United States Environmental Protection Agency (USEPA) documents:

- National Functional Guidelines for Inorganic Data Review (EPA 540-R-1-008)
- National Functional Guidelines for Organic Data Review (EPA 540/R-99/008)

and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996.

This DUSR pertains to the following samples:

Sample ID	Sample ID
0916-031504-0001	MW4009-031804-1243
MW4640S-031504-1255	MW4005-031804-1415
MW4637S-031504-1445	MW4003-031804-1535
0916-031604-0001	0916-031904-0001
0916-031604-0002	MW4118-031904-0945
MW4640S-031604-1100	MW4119-031904-1215
MW4637S-031604-1155	0916-031904-0002
MW4634S-031604-1330	MW4122-031904-1500
MW4417-031604-1500	
0894-031804-0001	
0894-031804-0002	
0916-031804-0001	
0916-031804-0002	

Project Samples were analyzed according to the following analytical methods:

	Parameter	Analytical Method	Holding Time Criteria
1.	Mercury in Liquid Waste (Manual Cold Vapor)	SW846 7470A	28 Days
2.	Semi-volatile Organic Compounds by GC/MS (water/soil - Days Ext.)	SW846 8270C	7/14 Days Ext./40 Days Post Ext.
3.	Trace Inductively Coupled Plasma Metals	SW846 6010B/6020	6 Months
4.	Volatile Organic Compounds by GC/MS (preserved)	SW846 8260B	14 Days
5.	Hexavalent Chromium	SW846 7196A	24 Hours?

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- Holding Times
- GC/MS Instrument Performance Check
- Initial Calibration Procedures
- Continuing Calibration Procedures
- Blank Sample Analysis
- System Monitoring Compound Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Internal Standard Recoveries
- ICP Interference Check Sample Performance
- ICP Serial Dilution Replicate Percent Difference
- Sample Data Reporting Format
- Data Qualifiers
- Summary

Preservation and Holding Times

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group. No qualification of the data is recommended.

GC/MS Instrument Performance Check

GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. No qualification of the data is recommended.

Initial Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols. No Qualification of the data is recommended.

Continuing Calibration Procedures

Continuing calibration verification (CCV) procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of VOCs (SW846 8260B), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 25% and/or a RRF less than 0.05:

Inst.	Date / Time	Target Analyte(s)	%D	RRF	Affected Sample(s)	Corrective Action
7	03/22/04 0817	Trichlorofluoromethane	26.1	0.34402	0916-031604-0001	See Action #1 Below
		Acetone	29.1	100	0916-031604-0002	See Action #1 Below
		trans-1,3-Dichloropropene	-29.4	0.46308	MW4634S-031604-1330	See Action #1 Below
		2-Hexanone	-28.7	0.22629	MW4417-031604-1500	See Action #1 Below
		Bromoform	-25.8	0.22202		See Action #1 Below
		1,2-Dibromo-3-chloropropane	-27.9	0.17871		See Action #1 Below
7	03/25/04 0843	Bromomethane	30.3	0.22667	0916-031804-0001	See Action #1 Below
		Trichlorofluoromethane	26	0.34402	0916-031804-0002	See Action #1 Below
					MW4009-031804-1243	
					MW4005-031804-1415	
					MW4003-031804-1535	
					0916-031904-0001	
					MW4118-031904-0945	
					MW4119-031904-1215	
					0916-031904-0002	
					MW4122-031904-1500	
10	03/24/04 1019	Acetone	-38.4	0.1762	0894-031804-0001	See Action #1 Below
					0894-031804-0002	

Action #1
Positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

Blank Sample Analysis

In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for metals and the common organic laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds. Target compounds were not detected in associated blank samples (trip, equipment, method) prepared and analyzed concurrently with the project samples, with the following exception(s):

Blank	Target Analyte(s)	Concn.	Affected Sample(s)	Flag sample results with a "U" if < to this value
Trip Blank	Acetone	3 ug/L	0916-031604-0002	30 ug/L
0916-031604-0001	2-Butanone	1.5 ug/L	MW4634S-031604-1330	15 ug/L

			MW4417-031604-1500	
Equipment Blank 0916-031604-0002	Chloroform	0.34 ug/L	MW4634S-031604-1330 MW4417-031604-1500	1.7 ug/L
Trip Blank 0916-031804-0001	Acetone 2-Butanone Methyl cyclohexane 1,2,4-Trichlorobenzene	2.7 ug/L 1.2 ug/L 0.29 ug/L 0.46 ug/L	0894-031804-0002 MW4009-031804-1243 MW4005-031804-1415 MW4003-031804-1535	27 ug/L 12 ug/L 1.45 ug/L 2.3 ug/L
Equipment Blank 0916-031804-0002	Acetone Chloroform	3.7 ug/L 0.36 ug/L	MW4009-031804-1243 MW4005-031804-1415 MW4003-031804-1535	37 ug/L 1.8 ug/L
Trip Blank 0916-031904-0001	Acetone	1.1 ug/L	MW4118-031904-0945 MW4119-031904-1215 0916-031904-0002 MW4122-031904-1500	11 ug/L
Method Blank I7, 3/25/04, 0954	1,2,4-Trichlorobenzene	0.2 ug/L	0916-031804-0001 0916-031804-0002 MW4009-031804-1243 MW4005-031804-1415 MW4003-031804-1535 0916-031904-0001 MW4118-031904-0945 MW4119-031904-1215 0916-031904-0002 MW4122-031904-1500	1 ug/L

Blank	Target Analyte(s)	Concn.	Affected Sample(s)	Flag sample results with a "U" if < to this value
0916-031504-0001	Barium Cadmium Copper Magnesium Manganese Potassium	0.0021 mg/L 0.00033 mg/L 0.0071 mg/L 0.034 mg/L 0.011 mg/L 0.17 mg/L	MW4640S-031504-1255 MW4637S-031504-1445	0.021 mg/L 0.0033 mg/L 0.071 mg/L 0.34 mg/L 0.11 mg/L 1.7 mg/L
Method Blank 3/22/2004	Mercury Copper Manganese Potassium	0.000036 mg/L 0.004 mg/L 0.002 mg/L 0.16 mg/L	0916-031504-0001 MW4640S-031504-1255 MW4637S-031504-1445 MW4122-031904-1500	0.00036 mg/L 0.04 mg/L 0.02 mg/L 1.6 mg/L

Blank	Target Analyte(s)	Concn.	Affected Sample(s)	Flag sample results with a "U" if < to this value
Equipment Blank 0916-031604-0002	Chromium, hexavalent	0.007 ug/L	MW4640S-031604-1100 MW4637S-031604-1155	0.035 ug/L

System Monitoring Compound Recoveries

System monitoring/surrogate compounds are added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C, and/or 8082 to confirm the efficiency of the sample preparation procedure. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. The calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts required dilution prior to analysis to either improve instrument performance by minimizing matrix interference or enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. No qualification of the data is recommended.

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS/MSD and LCS analyses fell within the laboratory QA acceptance criteria. No qualification of the data is recommended.

Internal Standard Recoveries

Internal Standard compounds were added to each sample matrix prior to the analysis of organic parameters by EPA Methods 8260B and/or 8270C to quantify the amount of the target compounds detected within each sample. The calculated response of each IS compound fell within the QA/QC criteria of +100% and – 50% of the corresponding CCV standard, with the following exception(s):

Sample ID	Non-Compliant IS	UCL Area	LCL Area	Sample Area	Analytes Affected
MW4009-031804-1243	1,4-Dichlorobenzene-d4	425548	106387	426519	See List Below

1,4-Dichlorobenzene-d4

Phenol, bis(2-Chloroethyl)ether, 2-Chlorophenol, Benzaldehyde, Acetophenone, 2-Methylphenol, 2,2'-oxybis(1-Chloropropane), 4-Methylphenol, N-Nitroso-di-n-propylamine, Hexachloroethane, 2-Fluorophenol, Phenol-d5, 2-Chlorophenol-d4, 1,2-Dichlorobenzene-d4

Action:

If the internal standard is greater than the upper limit, positive results for the associated target analytes are qualified "J" and non-detects should not be qualified. If the internal standard is less than the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "UJ". If the internal standard is less than 10% of the lower limit, positive results for the associated target analytes are qualified "J" and non-detects are qualified "R".

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were all within the acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. No qualification of the data is recommended.

ICP Serial Dilution Replicate Percent Difference

The results of the ICP Serial Dilution samples analyzed concurrently with the project samples were in accordance with the EPA QA acceptance criteria of less than 10% RPD for those target analytes with sample concentrations >50X the MDL. No qualification of the data is recommended.

Sample Data Reporting Format

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format. The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting format is complete and compliant with the objectives of the project. No qualification of the data is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target analytes detected below the reporting limit but above the method detection limit, and/or when target analytes were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Organic analyses samples that contained concentrations of target analytes at a reportable level in the associated method blanks were flagged by the laboratory with a "B". If the target analyte concentration was greater than 10 times (10X) the amount in any blank for the common laboratory contaminants or 5 times (5X) the amount for other target compounds, the "B" qualifier was not carried forward for database input; if less than the 10X or 5X rule the "B" qualifier was replaced with a "U". The "J" qualifier, which indicates an estimated value because the result was between the MDL and RL was carried through to the database.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of the data is 100%, with the few exceptions noted above.

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Data Usability Summary Report (DUSR)
Delphi-Dort (MI) Site
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Group # 4C19164

Analytical results for project samples were reviewed to evaluate the data usability. Data was assessed in accordance with guidance from the following United States Environmental Protection Agency (USEPA) documents:

- National Functional Guidelines for Inorganic Data Review (EPA 540-R-1-008)
- National Functional Guidelines for Organic Data Review (EPA 540/R-99/008)

and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996. This DUSR pertains to the following samples:

Sample ID
GP4237-031804-1000
GP4201-031804-1145
GP4202-031804-1445
GP4203-031804-1630
GP4208-031804-1830
GP4206-031904-0945
0894-031904-0001
GP4207-031904-1115
GP4205-031904-1230
GP4204-031904-1415

Project Samples were analyzed according to the following analytical methods:

	Parameter	Analytical Method	Holding Time Criteria
1.	Hexavalent Chromium	SW846 7196A	24 Hours
2.	Trace Inductively Coupled Plasma Metals	SW846 6010B/6020	6 Months
3.	Volatile Organic Compounds by GC/MS (preserved)	SW846 8260B	14 Days

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- Holding Times
- GC/MS Instrument Performance Check
- Initial Calibration Procedures
- Continuing Calibration Procedures
- Blank Sample Analysis
- System Monitoring Compound Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Internal Standard Recoveries
- ICP Interference Check Sample Performance
- ICP Serial Dilution Replicate Percent Difference
- Sample Data Reporting Format
- Data Qualifiers
- Summary

Preservation and Holding Times

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group. No qualification of the data is recommended.

GC/MS Instrument Performance Check

GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without

exception. No qualification of the data is recommended.

Initial Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols. No Qualification of the data is recommended.

Continuing Calibration Procedures

Continuing calibration verification (CCV) procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols. No Qualification of the data is recommended.

Blank Sample Analysis

In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for metals and the common organic laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds. Target compounds were not detected in associated blank samples (trip, equipment, method) prepared and analyzed concurrently with the project samples, with the following exception(s):

Blank	Target Analyte	Concn.	Associated Samples	Flag sample results
Method Blank	Acetone	0.83 ug/L	GP4237-031804-1000	8.3 ug/L
I11, 3/19/04	Methylene chloride	0.45 ug/L		4.5 ug/L

Blank	Target Compound	Concn.	Associated Samples	Flag sample results
Method Blank	Hexavalent Chromium	0.007	GP4201-031804-1145	0.035
			GP4202-031804-1445	
			GP4203-031804-1630	
			GP4208-031804-1830	
			GP4206-031904-0945	
			0894-031904-0001	
			GP4207-031904-1115	
			GP4205-031904-1230	

System Monitoring Compound Recoveries

System monitoring/surrogate compounds aree added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C, or 8082 to confirm the efficiency of the sample preparation procedure. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. The calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts required dilution prior to analysis to either improve instrument performance by minimizing matrix interference or enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results of the surrogate compounds with “DIL” indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. No qualification of the data is recommended.

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS/MSD and LCS analyses fell within the laboratory QA acceptance criteria, with the following exception(s):

LCS ID / Project Sample MS	Type	Target Analyte	%R	Affected Samples	Positive Results	Non Detect (ND)
GP4201-031804-1145	MS	Chromium		GP4202-031804-1445	J	R

				GP4203-031804-1630 GP4208-031804-1830 GP4206-031904-0945 0894-031904-0001 GP4207-031904-1115 GP4205-031904-1230 GP4204-031904-1415		

Internal Standard Recoveries

Internal Standard compounds were added to each sample matrix prior to the analysis of organic parameters by EPA Methods 8260B and/or 8270C to quantify the amount of the target compounds detected within each sample. The calculated response of each IS compound fell within the QA/QC criteria of +100% and – 50% of the corresponding CCV standard. No qualification of the data is recommended.

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were all within the acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. No qualification of the data is recommended.

ICP Serial Dilution Replicate Percent Difference

The results of the ICP Serial Dilution samples analyzed concurrently with the project samples were in accordance with the EPA QA acceptance criteria of less than 10% RPD for those target analytes with sample concentrations >50X the MDL. No qualification of the data is recommended.

Sample Data Reporting Format

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format. The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting format is complete and compliant with the objectives of the project. No qualification of the data is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target compounds detected below the reporting limit but above the method detection limit, and/or when target compounds were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Organic analyses samples that contained concentrations of target analytes at a reportable level in the associated method blanks were flagged by the laboratory with a “B”. If the target analyte concentration was greater than 10 times (10X) the amount in any blank for the common laboratory contaminants or 5 times (5X) the amount for other target compounds, the “B” qualifier was not carried forward for database input; if less than the 10X or 5X rule the “B” qualifier was replaced with a “U”. The “J” qualifier, which indicates an estimated value because the result was between the MDL and RL was carried through to the database.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of the data is 100% with the few exceptions noted above.

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Data Usability Summary Report (DUSR)
Delphi - Dort (MI)
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Group # 4C22115

Analytical results for the project samples were reviewed to evaluate the data usability. Data was assessed in accordance with guidance from the following United States Environmental Protection Agency (USEPA) documents:

- National Functional Guidelines for Inorganic Data Review (EPA 540-R-1-008)
- National Functional Guidelines for Organic Data Review (EPA 540/R-99/008)

and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996.

This DUSR pertains to the following samples:

Sample ID	Sample ID
0894-031904-0004	GP4265-032404-1015
GP4264-032204-1045	GP4266-032404-1200
GP4264-032204-1100	GP4266-032404-1230
GP4261-032304-0930	GP4267-032404-1420
GP4261-032304-1000	GP4267-032404-1445
0894-032304-0001	GP4268-032404-1545
GP4262-032304-1115	GP4268-032404-1615
GP4262-032304-1145	
GP4263-032304-1415	
GP4263-032304-1445	
0894-032304-0002	
GP4265-032404-0930	
0894-032404-0001	

Project Samples were analyzed according to the following analytical methods:

	Parameter	Analytical Method	Holding Time Criteria
1.	Hexavalent Chromium	SW846 7196A	24 Hours
2.	Trace Inductively Coupled Plasma Metals	SW846 6010B/6020	6 Months
3.	Volatile Organic Compounds by GC/MS (preserved)	SW846 8260B	14 Days
4.	Total Residue as Percent Solids	MCAWW 160.3MOD	28 Days?

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- Holding Times
- GC/MS Instrument Performance Check
- Initial Calibration Procedures
- Continuing Calibration Procedures
- Blank Sample Analysis
- System Monitoring Compound Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Internal Standard Recoveries
- Duplicate Sample Analysis
- ICP Interference Check Sample Performance
- Sample Data Reporting Format
- Data Qualifiers
- Summary

Preservation and Holding Times

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for

each project sample analyzed as part of this sample delivery group. No qualification of the data is recommended.

GC/MS Instrument Performance Check

GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. No qualification of the data is recommended.

Initial Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of VOCs (SW846 8260B), the initial calibration standards for the following target compound(s) exhibited a percent relative standard deviation (%RSD) greater than the acceptance criteria of 30% and/or a RRF less than 0.05:

Inst.	Date / Time	Target Analyte(s)	%RSD	RRF	Affected Sample(s)	Corrective Action
12	03/15/04 1642	Acetone	37.797	0.14941	GP4264-032204-1045 GP4264-032204-1100 GP4261-032304-0930 GP4261-032304-1000 GP4262-032304-1115 GP4262-032304-1145 GP4263-032304-1415 GP4263-032304-1445 0894-032304-0002 GP4265-032404-0930 0894-032404-0001 GP4265-032404-1015 GP4266-032404-1200 GP4266-032404-1230 GP4267-032404-1420 GP4267-032404-1445 GP4268-032404-1545 GP4268-032404-1615	See Action #1 Below

Action #1
Positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

Continuing Calibration Procedures

Continuing calibration verification (CCV) procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of VOCs (SW846 8260B), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 25% and/or a RRF less than 0.05:

Inst.	Date / Time	Target Analyte(s)	%D	RRF	Affected Sample(s)	Corrective Action
7	03/26/04 0944	Bromomethane Chloroethane Trichlorofluoromethane	37.5 27.7 33.3	0.22667 0.19657 0.34402	0894-032304-0001	See Action #1 Below See Action #1 Below See Action #1 Below
10	03/25/04 0851	Acetone	43.1	0.1762	0894-031904-0004	See Action #1 Below
12	03/28/04 1714	Acetone	29.3	100	0894-032404-0001	See Action #1 Below
12	03/31/04 1626	Trichlorofluoromethane Acetone	39.6 -32.2	0.41928 100	GP4264-032204-1045 GP4264-032204-1100	See Action #1 Below See Action #1 Below

					GP4261-032304-0930 GP4262-032304-1115 GP4263-032304-1415	
12	04/02/04 0725	Carbon tetrachloride trans-1,3-Dichloropropene Bromoform Cyclohexane	-25.3 -33.9 37 27.9	0.27159 0.41706 50 50	GP4262-032304-1145 GP4263-032304-1445 GP4265-032404-0930 GP4267-032404-1420 GP4268-032404-1545 GP4268-032404-1615	See Action #1 Below See Action #1 Below See Action #1 Below See Action #1 Below
12	04/04/04 1516	Acetone Trichlorofluoromethane	35.5 31.9	100 0.41928	GP4261-032304-1000 0894-032304-0002	See Action #1 Below See Action #1 Below
12	04/05/04 0431	trans-1,3-Dichloropropene Bromoform	-28.3 40.7	0.41706 50	GP4265-032404-1015 GP4266-032404-1200 GP4266-032404-1230 GP4267-032404-1445	See Action #1 Below See Action #1 Below

Action #1

Positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

Blank Sample Analysis

In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for metals and the common organic laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds. Target compounds were not detected in associated blank samples (trip, equipment, method) prepared and analyzed concurrently with the project samples, with the following exception(s):

Blank	Target Analyte(s)	Concn.	Affected Sample(s)	Flag sample results with a "U" if < to this value
Equipment Blank 0894-031904-0004	Acetone Methylene chloride	5.4 ug/L 0.32 ug/L	GP4206-031904-0945 0894-031904-0001 0894-031904-0002 GP4207-031904-1115 GP4205-031904-1230 0894-031904-0003 GP4204-031904-1415	54 ug/L 3.2 ug/L
Trip Blank 0894-032304-0001	Acetone 2-Butanone Trichloroethene	2.7 ug/L 1.3 ug/L 0.68 ug/L	GP4261-032304-0930 GP4261-032304-1000 GP4262-032304-1115 GP4262-032304-1145 GP4263-032304-1415 GP4263-032304-1445 0894-032304-0002	27 ug/L 13 ug/L 3.4 ug/L
Trip Blank 0894-032404-0001	Trichloroethene	0.3 ug/L	GP4265-032404-0930 GP4265-032404-1015 GP4266-032404-1200 GP4266-032404-1230 GP4267-032404-1420 GP4267-032404-1445 GP4268-032404-1545 GP4268-032404-1615	1.5 ug/L
Method Blank I12, 3/28/04, 1847	Methylene chloride 1,2,4-Trichlorobenzene	0.74 ug/L 0.24 ug/L	0894-032404-0001	7.4 ug/L 1.2 ug/L
Method Blank I12, 3/31/04, 2301	Trichloroethene	26 ug/kg	GP4264-032204-1045 GP4264-032204-1100 GP4261-032304-0930 GP4262-032304-1115	130 ug/kg

			GP4263-032304-1415	

System Monitoring Compound Recoveries

System monitoring/surrogate compounds are added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C, and/or 8082 to confirm the efficiency of the sample preparation procedure. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. The calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts required dilution prior to analysis to either improve instrument performance by minimizing matrix interference or enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. No qualification of the data is recommended.

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS/MSD and LCS analyses fell within the laboratory QA acceptance criteria. No qualification of the data is recommended.

Internal Standard Recoveries

Internal Standard compounds were added to each sample matrix prior to the analysis of organic parameters by EPA Methods 8260B and/or 8270C to quantify the amount of the target compounds detected within each sample. The calculated response of each IS compound fell within the QA/QC criteria of +100% and – 50% of the corresponding CCV standard. No qualification of the data is recommended.

Duplicate Sample Analysis

The replicate percent difference (RPD) was evaluated for each duplicate sample pair to monitor the reproducibility of the data. The RPD for each sample pair was within the QA/QC limit of 30% for aqueous samples and 50% for solid matrices, for those target analytes with sample concentrations >5X the MDL. No qualification of the data is recommended.

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were all within the acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. No qualification of the data is recommended.

Sample Data Reporting Format

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format. The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting format is complete and compliant with the objectives of the project. No qualification of the data is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target analytes detected below the reporting limit but above the method detection limit, and/or when target analytes were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Organic analyses samples that contained concentrations of target analytes at a reportable level in the associated method blanks were flagged by the laboratory with a “B”. If the target analyte concentration was greater than 10 times (10X) the amount in any blank for the common laboratory contaminants or 5 times (5X) the amount for other target compounds, the “B” qualifier was not carried forward for database input; if less than the 10X or 5X rule the “B” qualifier was replaced with a “U”. The “J” qualifier, which indicates an estimated value because the result was between the MDL and RL was carried through to the database.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of the data is 100%, with the few exceptions noted above.

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Data Usability Summary Report (DUSR)
Delphi - Dort (MI)
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Group # 4C24149

Analytical results for the project samples were reviewed to evaluate the data usability. Data was assessed in accordance with guidance from the following United States Environmental Protection Agency (USEPA) documents:

- National Functional Guidelines for Organic Data Review (EPA 540/R-99/008)

and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996.

This DUSR pertains to the following samples:

Sample ID	Sample ID
0916-032204-0001	MW4631M-032504-1520
MW4610D-032204-1050	MW4631D-032504-1610
MW4610-032204-1210	
MW4610S-032204-1420	
MW4602-032204-1710	
MW4643S-032304-1000	
MW4642S-032304-1125	
MW4603-032304-1340	
MW4623D-032304-1455	
MW4623S-032304-1755	
MW4605D-032504-1110	
MW4604-032504-1240	
MW4604D-032504-1355	

Project Samples were analyzed according to the following analytical methods:

	Parameter	Analytical Method	Holding Time Criteria
1.	Volatile Organic Compounds by GC/MS (preserved)	SW846 8260B	14 Days

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- Holding Times
- GC/MS Instrument Performance Check
- Initial Calibration Procedures
- Continuing Calibration Procedures
- Blank Sample Analysis
- System Monitoring Compound Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Internal Standard Recoveries
- Sample Data Reporting Format
- Data Qualifiers
- Summary

Preservation and Holding Times

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group. No qualification of the data is recommended.

GC/MS Instrument Performance Check

GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. No qualification of the data is recommended.

Initial Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols. No Qualification of the data is recommended.

Continuing Calibration Procedures

Continuing calibration verification (CCV) procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of VOCs (SW846 8260B), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 25% and/or a RRF less than 0.05:

Inst.	Date / Time	Target Analyte(s)	%D	RRF	Affected Sample(s)	Corrective Action
7	03/26/04 0944	Bromomethane	37.5	0.22667	0916-032204-0001	See Action #1 Below
		Chloroethane	27.7	0.19657	MW4610D-032204-1050	See Action #1 Below
		Trichlorofluoromethane	33.3	0.34402	MW4610-032204-1210	See Action #1 Below
					MW4610S-032204-1420	
					MW4602-032204-1710	
					MW4623D-032304-1455	
					MW4623S-032304-1755	
7	04/02/04 1055	Bromomethane	27.3	0.22667	MW4604-032504-1240	See Action #1 Below
		Chloroethane	26.7	0.19657	MW4604D-032504-1355	See Action #1 Below
		1,2-Dibromo-3-chloropropane	26.2	0.17871	MW4631M-032504-1520	See Action #1 Below
		1,2,4-Trichlorobenzene	30.1	0.8062	MW4631D-032504-1610	See Action #1 Below
		trans-1,3-Dichloropropene	31.6	0.46308		See Action #1 Below
7	04/05/04 0814	Bromomethane	39.8	0.22667	MW4605D-032504-1110	See Action #1 Below
		Chloroethane	39.8	0.19657		See Action #1 Below
		Acetone	39.3	100		See Action #1 Below
		2-Butanone	27.6	0.12939		See Action #1 Below
		Trichlorofluoromethane	35.5	0.34402		See Action #1 Below
11	03/29/04 1001	Dichlorodifluoromethane	55.7	0.07827	MW4643S-032304-1000	See Action #1 Below
		Methyl acetate	27.6	0.19366	MW4642S-032304-1125	See Action #1 Below
					MW4603-032304-1340	

Action #1
Positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

Blank Sample Analysis

In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for metals and the common organic laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds. Target compounds were not detected in associated blank samples (trip, equipment, method) prepared and analyzed concurrently with the project samples, with the following exception(s):

Blank	Target Analyte(s)	Concn.	Affected Sample(s)	Flag sample results with a "U" if < to this value
Trip Blank 0916-032204-0001	Acetone	2.8 ug/L	MW4610D-032204-1050	28 ug/L
	2-Butanone	1.3 ug/L	MW4610-032204-1210	13 ug/L
			MW4610S-032204-1420	
			MW4602-032204-1710	
Method Blank I7, 4/5/04, 0925	Methylene chloride	0.37 ug/L	MW4605D-032504-1110	3.7 ug/L
Method Blank	Acetone	0.74 ug/L	MW4643S-032304-1000	7.4 ug/L

I11, 3/29/04, 1111	Methylene chloride	1.8 ug/L	MW4642S-032304-1125 MW4603-032304-1340	18 ug/L

System Monitoring Compound Recoveries

System monitoring/surrogate compounds are added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C, and/or 8082 to confirm the efficiency of the sample preparation procedure. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. The calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts required dilution prior to analysis to either improve instrument performance by minimizing matrix interference or enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. No qualification of the data is recommended.

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS/MSD and LCS analyses fell within the laboratory QA acceptance criteria. No qualification of the data is recommended.

Internal Standard Recoveries

Internal Standard compounds were added to each sample matrix prior to the analysis of organic parameters by EPA Methods 8260B and/or 8270C to quantify the amount of the target compounds detected within each sample. The calculated response of each IS compound fell within the QA/QC criteria of +100% and – 50% of the corresponding CCV standard. No qualification of the data is recommended.

Sample Data Reporting Format

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format. The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting format is complete and compliant with the objectives of the project. No qualification of the data is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target analytes detected below the reporting limit but above the method detection limit, and/or when target analytes were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Organic analyses samples that contained concentrations of target analytes at a reportable level in the associated method blanks were flagged by the laboratory with a “B”. If the target analyte concentration was greater than 10 times (10X) the amount in any blank for the common laboratory contaminants or 5 times (5X) the amount for other target compounds, the “B” qualifier was not carried forward for database input; if less than the 10X or 5X rule the “B” qualifier was replaced with a “U”. The “J” qualifier, which indicates an estimated value because the result was between the MDL and RL was carried through to the database.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of the data is 100%, with the few exceptions noted above.

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Data Usability Summary Report (DUSR)
Delphi - Dort (MI)
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Group # 4C26170

Analytical results for the project samples were reviewed to evaluate the data usability. Data was assessed in accordance with guidance from the following United States Environmental Protection Agency (USEPA) documents:

- National Functional Guidelines for Inorganic Data Review (EPA 540-R-1-008)
- National Functional Guidelines for Organic Data Review (EPA 540/R-99/008)

and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996.

This DUSR pertains to the following samples:

Sample ID	Sample ID
GP4269-032504-0920	MW4624S-032904-1230
0894-032504-0001	MW4629D-032904-1455
0894-032504-0002	0916-032904-0002
GP4269-032504-0945	
GP4270-032504-1045	
GP4270-032504-1115	
GP4271-032504-1315	
GP4271-032504-1345	
GP4272-032504-1500	
GP4272-032504-1515	
0894-032504-0003	
0916-032904-0001	
MW4624D-032904-1130	

Project Samples were analyzed according to the following analytical methods:

	Parameter	Analytical Method	Holding Time Criteria
1.	Volatile Organic Compounds by GC/MS (preserved)	SW846 8260B	14 Days
2.	Total Residue as Percent Solids	MCAWW 60.3 MOD	28 Days

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- Holding Times
- GC/MS Instrument Performance Check
- Initial Calibration Procedures
- Continuing Calibration Procedures
- Blank Sample Analysis
- System Monitoring Compound Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Internal Standard Recoveries
- Duplicate Sample Analysis
- Sample Data Reporting Format
- Data Qualifiers
- Summary

Preservation and Holding Times

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group. No qualification of the data is recommended.

GC/MS Instrument Performance Check

GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. No qualification of the data is recommended.

Initial Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of VOCs (SW846 8260B), the initial calibration standards for the following target compound(s) exhibited a percent relative standard deviation (%RSD) greater than the acceptance criteria of 30% and/or a RRF less than 0.05:

Inst.	Date / Time	Target Analyte(s)	%RSD	RRF	Affected Sample(s)	Corrective Action
12	03/15/04 1642	Acetone	37.797	0.14941	GP4269-032504-0920 GP4269-032504-0945 GP4270-032504-1045 GP4270-032504-1115 GP4271-032504-1315 GP4271-032504-1345 GP4272-032504-1500 GP4272-032504-1515 0894-032504-0003	See Action #1 Below

Action #1
Positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

Continuing Calibration Procedures

Continuing calibration verification (CCV) procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of VOCs (SW846 8260B), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 25% and/or a RRF less than 0.05:

Inst.	Date / Time	Target Analyte(s)	%D	RRF	Affected Sample(s)	Corrective Action
7	04/02/04 1055	Bromomethane	27.3	0.22667	0894-032504-0001	See Action #1 Below
		Chloroethane	26.7	0.19657	0894-032504-0002	See Action #1 Below
		trans-1,3-Dichloropropene	31.6	0.46308		See Action #1 Below
		1,2-Dibromo-3-chloropropane	26.2	0.17871		See Action #1 Below
		1,2,4-Trichlorobenzene	30.1	0.8062		See Action #1 Below
10	04/05/04 1022	Bromomethane	30.5	0.09361	MW4624S-032904-1230	See Action #1 Below
		Bromoform	25.1	0.19042	MW4629D-032904-1455	See Action #1 Below
		1,2-Dibromo-3-chloropropane	27.6	0.1713	0916-032904-0002	See Action #1 Below
		1,2,4-Trichlorobenzene	38.7	0.63349		See Action #1 Below
		Methyl tert-butyl ether	33.6	0.59294		See Action #1 Below
11	04/05/04 2042	Dichlorodifluoromethane	46.2	0.07827	0916-032904-0001	See Action #1 Below
		1,2,4-Trichlorobenzene	-37.1	0.88556	MW4624D-032904-1130	See Action #1 Below
		Methyl acetate	26.6	0.19366		See Action #1 Below
12	04/02/04 0725	Carbon tetrachloride	-25.3	0.27159	GP4269-032504-0920	See Action #1 Below
		trans-1,3-Dichloropropene	-33.9	0.41706	GP4269-032504-0945	See Action #1 Below
		Bromoform	37	50	GP4270-032504-1045	See Action #1 Below
		Cyclohexane	27.9	50	GP4270-032504-1115	See Action #1 Below
					GP4271-032504-1315	
					GP4272-032504-1500	
12	04/06/04 1851	Acetone	-34.6	100	GP4271-032504-1345	See Action #1 Below
		Methyl tert-butyl ether	33.7	0.60089	GP4272-032504-1515	See Action #1 Below

		1,2-Dibromo-3-chloropropane	27.7	50	0894-032504-0003		
		1,2,4-Trichlorobenzene	-28.6	0.59946			

Action #1
Positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

Blank Sample Analysis

In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for metals and the common organic laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds. Target compounds were not detected in associated blank samples (trip, equipment, method) prepared and analyzed concurrently with the project samples, with the following exception(s):

Blank	Target Analyte(s)	Concn.	Affected Sample(s)	Flag sample results with a "U" if < to this value
Equipment Blank 0894-032504-0001	Acetone Trichloroethene	7.5 ug/L 0.66 ug/L	GP4269-032504-0920 GP4269-032504-0945 GP4270-032504-1045 GP4270-032504-1115 GP4271-032504-1315 GP4271-032504-1345 GP4272-032504-1500 GP4272-032504-1515 0894-032504-0003	75 ug/L 3.3 ug/L
Trip Blank 0894-032504-0002	Acetone 2-Butanone Methylene chloride Trichloroethene	2.7 ug/L 1.1 ug/L 0.78 ug/L 1.3 ug/L	GP4269-032504-0920 0894-032504-0001 GP4269-032504-0945 GP4270-032504-1045 GP4270-032504-1115 GP4271-032504-1315 GP4271-032504-1345 GP4272-032504-1500 GP4272-032504-1515 0894-032504-0003	27 ug/L 11 ug/L 7.8 ug/L 6.5 ug/L
Trip Blank 0916-032904-0001	Acetone 2-Butanone Methylene chloride	2 ug/L 0.98 ug/L 0.38 ug/L	MW4624D-032904-1130 MW4624S-032904-1230 MW4629D-032904-1455 0916-032904-0002	20 ug/L 9.8 ug/L 3.8 ug/L
Method Blank I10, 4/5/04, 1155	Methylene chloride	0.41 ug/L	MW4624S-032904-1230 MW4629D-032904-1455 0916-032904-0002	4.1 ug/L
Method Blank I11, 4/5/04, 2215	Acetone Methylene chloride 1,2,4-Trichlorobenzene	0.84 ug/L 0.5 ug/L 0.23 ug/L	0916-032904-0001 MW4624D-032904-1130	8.4 ug/L 5 ug/L 1.15 ug/L

System Monitoring Compound Recoveries

System monitoring/surrogate compounds are added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C, and/or 8082 to confirm the efficiency of the sample preparation procedure. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. The calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts required dilution prior to analysis to either improve instrument performance by minimizing matrix interference or enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. No qualification of the data is recommended.

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS/MSD and LCS analyses fell within the laboratory QA acceptance criteria. No qualification of the data is recommended.

Internal Standard Recoveries

Internal Standard compounds were added to each sample matrix prior to the analysis of organic parameters by EPA Methods 8260B and/or 8270C to quantify the amount of the target compounds detected within each sample. The calculated response of each IS compound fell within the QA/QC criteria of +100% and – 50% of the corresponding CCV standard. No qualification of the data is recommended.

Duplicate Sample Analysis

The replicate percent difference (RPD) was evaluated for each duplicate sample pair to monitor the reproducibility of the data. The RPD for each sample pair was within the QA/QC limit of 30% for aqueous samples and 50% for solid matrices, for those target analytes with sample concentrations >5X the MDL. No qualification of the data is recommended.

Sample Data Reporting Format

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format. The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting format is complete and compliant with the objectives of the project. No qualification of the data is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target analytes detected below the reporting limit but above the method detection limit, and/or when target analytes were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Organic analyses samples that contained concentrations of target analytes at a reportable level in the associated method blanks were flagged by the laboratory with a “B”. If the target analyte concentration was greater than 10 times (10X) the amount in any blank for the common laboratory contaminants or 5 times (5X) the amount for other target compounds, the “B” qualifier was not carried forward for database input; if less than the 10X or 5X rule the “B” qualifier was replaced with a “U”. The “J” qualifier, which indicates an estimated value because the result was between the MDL and RL was carried through to the database.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of the data is 100%, with the few exceptions noted above.

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Data Usability Summary Report (DUSR)
Delphi - Dort (MI)
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Group # A4C270105

Analytical results for project samples were reviewed to evaluate the data usability. Data was assessed in accordance with guidance from the following United States Environmental Protection Agency (USEPA) documents:

and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996. This DUSR pertains to the following samples:

Sample ID
0916-032604-0001
MW4630M-032604-
MW4630D-032604-
MW4629S-032604-1325

Project Samples were analyzed according to the following analytical methods:

	Parameter	Analytical Method	Holding Time Criteria
1.	Volatile Organic Compounds by GC/MS (preserved)	SW846 8260B	14 Days

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- Holding Times
- GC/MS Instrument Performance Check
- Initial Calibration Procedures
- Continuing Calibration Procedures
- Blank Sample Analysis
- System Monitoring Compound Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Internal Standard Recoveries
- Sample Data Reporting Format
- Data Qualifiers
- Summary

Preservation and Holding Times

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group. No qualification of the data is recommended.

GC/MS Instrument Performance Check

GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. No qualification of the data is recommended.

Initial Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of volatile organic compounds (SW846 8260B), the initial calibration standards for the following target compound(s) exhibited a percent relative standard deviation (%RSD) greater than the acceptance criteria of 30%:

Inst.	Date / Time	Target Analyte	%RSD	RRF	Associated Samples	Corrective Action
12	3/15/04 1642	Acetone	37.797	0.14941	0916-032604-0001 MW4630M-032604- MW4630D-032604- MW4629S-032604-1325	See Action #1 Below

Action #1

Positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

Continuing Calibration Procedures

Continuing calibration verification (CCV) procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of volatile organic compounds (SW846 8260B), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 25%:

Inst.	Date / Time	Target Analyte	%D	RRF	Associated Samples	Corrective Action
12	3/28/04 1714	Acetone	29.3	100	0916-032604-0001 MW4630M-032604- MW4630D-032604- MW4629S-032604-1325	See Action #1 Below

Action #1

Positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

Blank Sample Analysis

In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for metals and the common organic laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds. Target compounds were not detected in associated blank samples (trip, equipment, method) prepared and analyzed concurrently with the project samples, with the following exception(s):

Blank	Target Analyte	Concn.	Associated Samples	Flag sample results
Trip Blank 0916-032604-0001	Acetone 2-Butanone	2 ug/L 1.6 ug/L	MW4630M-032604- MW4630D-032604- MW4629S-032604-1325	20 ug/L 16 ug/L
Method Blank I12, 3/28/04, 1847	Methylene chloride 1,2,4-Trichlorobenzene	0.74 ug/L 0.24 ug/L	0916-032604-0001 MW4630M-032604- MW4630D-032604- MW4629S-032604-1325	7.4 ug/L 1.2 ug/L

System Monitoring Compound Recoveries

System monitoring/surrogate compounds aree added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C, or 8082 to confirm the efficiency of the sample preparation procedure. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. The calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts required dilution prior to analysis to either improve instrument performance by minimizing matrix interference or enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results of the surrogate compounds with "DIL" indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. No qualification of the data is recommended.

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS/MSD and LCS analyses fell within the laboratory QA acceptance criteria. No qualification of the data is recommended.

Internal Standard Recoveries

Internal Standard compounds were added to each sample matrix prior to the analysis of organic parameters by EPA Methods 8260B and/or 8270C to quantify the amount of the target compounds detected within each sample. The calculated response of each IS compound fell within the QA/QC criteria of +100% and – 50% of the corresponding CCV standard. No qualification of the data is recommended.

Sample Data Reporting Format

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format. The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting format is complete and compliant with the objectives of the project. No qualification of the data is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target compounds detected below the reporting limit but above the method detection limit, and/or when target compounds were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Organic analyses samples that contained concentrations of target analytes at a reportable level in the associated method blanks were flagged by the laboratory with a “B”. If the target analyte concentration was greater than 10 times (10X) the amount in any blank for the common laboratory contaminants or 5 times (5X) the amount for other target compounds, the “B” qualifier was not carried forward for database input; if less than the 10X or 5X rule the “B” qualifier was replaced with a “U”. The “J” qualifier, which indicates an estimated value because the result was between the MDL and RL was carried through to the database.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of the data is 100% with the few exceptions noted above.

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Data Usability Summary Report (DUSR)
Delphi - Dort (MI) Field Event III
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Group # 4C27113

Analytical results for the project samples were reviewed to evaluate the data usability. Data was assessed in accordance with guidance from the following Federal and/or State guidance documents:

- USEPA National Functional Guidelines for Inorganic Data Review (EPA 540-R-1-008)
- USEPA National Functional Guidelines for Organic Data Review (EPA 540/R-99/008)

and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996.

This DUSR pertains to the following samples:

Sample ID	Sample ID
B2612-032604-0930	B4503-033004-1130
B2612-032604-1000	B4503-033004-1215
GP4273-032604-1100	B4504-033004-1400
GP4273-032604-1200	B4504-033004-1515
GP4274-032604-1545	B4502-033004-1600
GP4274-032604-1400	B4502-033004-1645
0894-032604-0001	B4501-033004-1715
GP4304-032904-1100	B4501-033004-1800
GP4305-032904-1215	
GP4306-032904-1400	
GP4211-032904-1645	
GP4214-033004-1000	
0894-033004-0001	

Project Samples were analyzed according to the following analytical methods:

	Parameter	Analytical Method	Holding Time Criteria
1.	Semi-volatile Organic Compounds by GC/MS (water/soil - Days Ext.)	SW846 8270C	7/14 Days Ext./40 Days Post Ext.
2.	Total Residue as Percent Solids	MCAWW 160.3 MOD	7 Days
3.	Volatile Organic Compounds by GC/MS (preserved)	SW846 8260B	14 Days
4.	Trace Inductively Coupled Plasma Metals	SW846 6010B/6020	6 Months
5.	Hexavalent Chromium	SW846 7196A	24 Hours

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- Holding Times
- GC/MS Instrument Performance Check
- Initial Calibration Procedures
- Continuing Calibration Procedures
- Blank Sample Analysis
- System Monitoring Compound Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Internal Standard Recoveries
- Duplicate Sample Analysis
- ICP Interference Check Sample Performance
- ICP Serial Dilution Replicate Percent Difference
- Sample Data Reporting Format
- Data Qualifiers
- Summary

Preservation and Holding Times

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group. No qualification of the data is recommended.

GC/MS Instrument Performance Check

GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. No qualification of the data is recommended.

Initial Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of VOCs (SW846 8260B), the initial calibration standards for the following target compound(s) exhibited a percent relative standard deviation (%RSD) greater than the acceptance criteria of 30% and/or a RRF less than 0.05:

Inst.	Date / Time	Target Analyte(s)	%RSD	RRF	Affected Sample(s)	Corrective Action
12	01/22/04 1802	Acetone	37.797	0.14941	B2612-032604-0930 B2612-032604-1000 GP4273-032604-1100 GP4273-032604-1200 GP4274-032604-1545 GP4274-032604-1400 0894-032604-0001	See Action #1 Below

Action #1
Positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

Continuing Calibration Procedures

Continuing calibration verification (CCV) procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of VOCs (SW846 8260B), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 25% and/or a RRF less than 0.05:

Inst.	Date / Time	Target Analyte(s)	%D	RRF	Affected Sample(s)	Corrective Action
10	04/07/04 0909	Dichlorodifluoromethane	41	0.14106	B4503-033004-1215	See Action #1 Below
		Trichlorofluoromethane	35.2	50	B4504-033004-1515	See Action #1 Below
		Acetone	46.5	0.1762	B4502-033004-1645	See Action #1 Below
		2-Butanone	31.6	0.20239	B4501-033004-1800	See Action #1 Below
12	04/06/04 1851	Acetone	34.6	100	B2612-032604-0930	See Action #1 Below
		Methyl tert-butyl ether	33.7	0.60089	B2612-032604-1000	See Action #1 Below
		1,2-Dibromo-3-chloropropane	27.7	50	GP4273-032604-1100	See Action #1 Below
		1,2,4-Trichlorobenzene	28.6	0.59946	GP4273-032604-1200	See Action #1 Below
					GP4274-032604-1545	
					GP4274-032604-1400	
					0894-032604-0001	

Action #1
Positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

During the analysis of SVOCs (SW846 8270C), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 25% and/or a RRL less than 0.05:

Inst.	Date / Time	Target Analyte(s)	%D	RRF	Affected Sample(s)	Corrective Action
7	04/02/04 0846	2-Methylphenol	25.31987	1.60089	B2612-032604-1000	See Action #1 Below

Action #1
Positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

Blank Sample Analysis

In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for metals and the common organic laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds. Target compounds were not detected in associated blank samples (trip, equipment, method) prepared and analyzed concurrently with the project samples, with the following exception(s):

Blank	Target Analyte(s)	Concn.	Affected Sample(s)	Flag sample results with a "U" if < to this value
0916-033004-0001 Trip Blank	Acetone 2-Butanone Methylene chloride	2.9 ug/L 2.4 ug/L 0.37 ug/L	B4503-033004-1215 B4504-033004-1515 B4502-033004-1645 B4501-033004-1800	29 ug/L 24 ug/L 3.7 ug/L
Trip Blank 0916-032904-0001	Acetone 2-Butanone Methylene chloride	2 ug/L 0.98 ug/L 0.38 ug/L	GP4304-032904-1100 GP4305-032904-1215 GP4306-032904-1400	20 ug/L 9.8 ug/L 3.8 ug/L
Trip Blank 0916-032604-0001	Acetone 2-Butanone	2 ug/L 1.6 ug/L	B2612-032604-0930 B2612-032604-1000 GP4273-032604-1100 GP4273-032604-1200 GP4274-032604-1545 GP4274-032604-1400 0894-032604-0001	20 ug/L 16 ug/L
Method Blank I10, 03/31/04, 11:22	Acetone Methylene chloride	1.1 ug/L 0.48 ug/L	GP4304-032904-1100 GP4305-032904-1215 GP4306-032904-1400	11 ug/L 4.8 ug/L
Method Blank	Acetone	180 ug/kg	B2612-032604-0930 B2612-032604-1000 GP4273-032604-1100 GP4273-032604-1200 GP4274-032604-1545 GP4274-032604-1400 0894-032604-0001	1800 ug/kg

Blank	Target Analyte(s)	Concn.	Affected Sample(s)	Flag sample results with a "U" if < to this value
Method Blank Batch 4090638	Hexavalent Chromium	0.02 mg/L	GP4211-032904-1645	0.1 mg/L
Method Blank Batch 4091267	Hexavalent Chromium	0.02 mg/L	GP4214-033004-1000 0894-033004-0001	0.1 mg/L

System Monitoring Compound Recoveries

System monitoring/surrogate compounds are added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C, and/or 8082 to confirm the efficiency of the sample preparation procedure. The calculated recovery for each surrogate compound was

evaluated to confirm the accuracy of the reported results. The calculated recovery of these compounds fell within the laboratory specific quality control criteria, with the following exception(s):

Surrogate Percent Recovery Criteria			
Surrogate		**Aqueous Matrix (%)**	**Solid Matrix (%)**
Dibromofluoromethane	S01	73 - 122	59 - 138
1,2-Dichloroethane-d4	S02	61 - 128	61 - 130
Toluene-d8	S03	76 - 110	60 - 143
4-Bromofluorobenzene	S04	74 - 116	47 - 158

Project Sample ID	Matrix	S01 %R	S02 %R	S03 %R	S04 %R	Positive Results	Non Detect (ND)
B2612-032604-0930	Soil	75	0	120	92	J	R
B2612-032604-1000	Soil	54	0	114	76	J	R
GP4274-032604-1400	Soil	0	0	76	73	J	R
0894-032604-0001	Soil	56	0	80	88	J	R

Affected Analytes

All VOC target analytes in identified project sample(s).

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS/MSD and LCS analyses fell within the laboratory QA acceptance criteria. No qualification of the data is recommended.

Internal Standard Recoveries

Internal Standard compounds were added to each sample matrix prior to the analysis of organic parameters by EPA Methods 8260B and/or 8270C to quantify the amount of the target compounds detected within each sample. The calculated response of each IS compound fell within the QA/QC criteria of +100% and – 50% of the corresponding CCV standard. No qualification of the data is recommended.

Duplicate Sample Analysis

The replicate percent difference (RPD) was evaluated for each duplicate sample pair to monitor the reproducibility of the data. The RPD for each sample pair was within the QA/QC limit of 30% for aqueous samples and 50% for solid matrices, for those target analytes with sample concentrations >5X the MDL. No qualification of the data is recommended.

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were all within the acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. No qualification of the data is recommended.

ICP Serial Dilution Replicate Percent Difference

The results of the ICP Serial Dilution samples analyzed concurrently with the project samples were in accordance with the EPA QA acceptance criteria of less than 10% RPD for those target analytes with sample concentrations >50X the MDL. No qualification of the data is recommended.

Sample Data Reporting Format

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format. The data package has been reviewed for

completeness and found to contain each required sample result and associated QA/QC report form. The reporting format is complete and compliant with the objectives of the project. No qualification of the data is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target analytes detected below the reporting limit but above the method detection limit, and/or when target analytes were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Organic analyses samples that contained concentrations of target analytes at a reportable level in the associated method blanks were flagged by the laboratory with a “B”. If the target analyte concentration was greater than 10 times (10X) the amount in any blank for the common laboratory contaminants or 5 times (5X) the amount for other target compounds, the “B” qualifier was not carried forward for database input; if less than the 10X or 5X rule the “B” qualifier was replaced with a “U”. The “J” qualifier, which indicates an estimated value because the result was between the MDL and RL was carried through to the database.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of the data is 100%, with the few exceptions noted above.

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Data Usability Summary Report (DUSR)
Delphi - Dort (MI) Field Event III
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Group # 4C31304

Analytical results for the project samples were reviewed to evaluate the data usability. Data was assessed in accordance with guidance from the following Federal and/or State guidance documents:

- USEPA National Functional Guidelines for Inorganic Data Review (EPA 540-R-1-008)
- USEPA National Functional Guidelines for Organic Data Review (EPA 540/R-99/008)

and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996.

This DUSR pertains to the following samples:

Sample ID	Sample ID
0916-033004-0001	GP4277-033104-1500
MW4625D-033004-	GP4277-033104-1530
MW4625S-033004-1035	GP4278-033104-1615
MW4626D-033004-	GP4278-033104-1630
MW4626S-033004-1500	GP4279-033104-1715
MW4620D-033104-	
0916-033104-0001	
MW4620S-033104-1200	
GP4275-033104-0915	
GP4275-033104-0930	
GP4276-033104-1030	
0894-033104-0001	
GP4276-033104-1200	

Project Samples were analyzed according to the following analytical methods:

	Parameter	Analytical Method	Holding Time Criteria
1.	Volatile Organic Compounds by GC/MS (preserved)	SW846 8260B	14 Days
2.	Total Residue as Percent Solids	MCAWW 160.3 MOD	0

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- Holding Times
- GC/MS Instrument Performance Check
- Initial Calibration Procedures
- Continuing Calibration Procedures
- Blank Sample Analysis
- System Monitoring Compound Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Internal Standard Recoveries
- Duplicate Sample Analysis
- Sample Data Reporting Format
- Data Qualifiers
- Summary

Preservation and Holding Times

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group. No qualification of the data is recommended.

GC/MS Instrument Performance Check

GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. No qualification of the data is recommended.

Initial Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols. No Qualification of the data is recommended.

Continuing Calibration Procedures

Continuing calibration verification (CCV) procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of VOCs (SW846 8260B), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 25% and/or a RRF less than 0.05:

Inst.	Date / Time	Target Analyte(s)	%D	RRF	Affected Sample(s)	Corrective Action
10	04/07/04 0909	Dichlorodifluoromethane	41	0.14106	MW4626D-033004-1345	See Action #1 Below
		Trichlorofluoromethane	35.2	50	MW4626S-033004-1500	See Action #1 Below
		Acetone	46.5	0.1762		See Action #1 Below
		2-Butanone	31.6	0.20239		See Action #1 Below
11	04/07/04 0922	Dichlorodifluoromethane	55	0.07827	0916-033104-0001	See Action #1 Below
		Acetone	41.4	0.14677		See Action #1 Below
		2-Butanone	30	0.12256		See Action #1 Below
		2-Hexanone	39.1	100		See Action #1 Below
		1,2,4-Trichlorobenzene	34.9	0.88556		See Action #1 Below
12	04/08/04 1646	1,2,4-Trichlorobenzene	34	0.59946	GP4275-033104-0915	See Action #1 Below
					GP4275-033104-0930	
					GP4276-033104-1030	
					0894-033104-0001	
					GP4276-033104-1200	
					GP4277-033104-1500	
					GP4277-033104-1530	
					GP4278-033104-1615	
					GP4278-033104-1630	
					GP4279-033104-1715	

Action #1
Positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

Blank Sample Analysis

In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for metals and the common organic laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds. Target compounds were not detected in associated blank samples (trip, equipment, method) prepared and analyzed concurrently with the project samples, with the following exception(s):

Blank	Target Analyte(s)	Concn.	Affected Sample(s)	Flag sample results with a "U" if < to this value
0916-033004-0001	Acetone	2.9 ug/L	MW4625D-033004-0945	29 ug/L
Trip Blank	2-Butanone	2.4 ug/L	MW4625S-033004-1035	24 ug/L
	Methylene chloride	0.37 ug/L	MW4626D-033004-1345	3.7 ug/L
			MW4626S-033004-1500	
0916-033104-0001	Acetone	2.4 ug/L	MW4620D-033104-1015	24 ug/L

Trip Blank	2-Butanone	1.2 ug/L	MW4620S-033104-1200 GP4275-033104-0915 GP4275-033104-0930 GP4276-033104-1030 0894-033104-0001 GP4276-033104-1200 GP4277-033104-1500 GP4277-033104-1530 GP4278-033104-1615 GP4278-033104-1630 GP4279-033104-1715	12 ug/L
I7, 04/10/04, 11:22 Method Blank	Methylene chloride 1,2,4-Trichlorobenzene	0.88 ug/L 0.24 ug/L	0916-033004-0001 MW4625D-033004-0945 MW4625S-033004-1035	8.8 ug/L 1.2 ug/L
I10, 04/06/04, 00:29 Method Blank	Acetone	1.1 ug/L	MW4620D-033104-1015 MW4620S-033104-1200	11 ug/L
I11, 04/07/07, 10:55 Method Blank	Acetone	0.75 ug/L	0916-033104-0001	7.5 ug/L

System Monitoring Compound Recoveries

System monitoring/surrogate compounds are added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C, and/or 8082 to confirm the efficiency of the sample preparation procedure. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. The calculated recovery of these compounds fell within the laboratory specific quality control criteria, with the following exception(s):

Surrogate Percent Recovery Criteria			
Surrogate		**Aqueous Matrix (%)**	**Solid Matrix (%)**
Dibromofluoromethane	S01	low high	59 - 138
1,2-Dichloroethane-d4	S02	low high	61 - 130
Toluene-d8	S03	low high	60 - 143
4-Bromofluorobenzene	S04	low high	47 - 158

Project Sample ID	Matrix	S01 %R	S02 %R	S03 %R	S04 %R	Positive Results	Non Detect (ND)
GP4275-033104-0930	Soil	41	0	86	76	J	R
GP4277-033104-1530	Soil	0	0	9.5	11	J	R
GP4278-033104-1630	Soil	70	0	86	85	J	R

Affected Analytes

All VOC target analytes in identified project sample(s).

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS/MSD and LCS analyses fell within the laboratory QA acceptance criteria. No qualification of the data is recommended.

Internal Standard Recoveries

Internal Standard compounds were added to each sample matrix prior to the analysis of organic parameters by EPA Methods 8260B and/or

8270C to quantify the amount of the target compounds detected within each sample. The calculated response of each IS compound fell within the QA/QC criteria of +100% and – 50% of the corresponding CCV standard. No qualification of the data is recommended.

Duplicate Sample Analysis

The replicate percent difference (RPD) was evaluated for each duplicate sample pair to monitor the reproducibility of the data. The RPD for each sample pair was within the QA/QC limit of 30% for aqueous samples and 50% for solid matrices, for those target analytes with sample concentrations >5X the MDL. No qualification of the data is recommended.

Sample Data Reporting Format

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format. The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting format is complete and compliant with the objectives of the project. No qualification of the data is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target analytes detected below the reporting limit but above the method detection limit, and/or when target analytes were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Organic analyses samples that contained concentrations of target analytes at a reportable level in the associated method blanks were flagged by the laboratory with a “B”. If the target analyte concentration was greater than 10 times (10X) the amount in any blank for the common laboratory contaminants or 5 times (5X) the amount for other target compounds, the “B” qualifier was not carried forward for database input; if less than the 10X or 5X rule the “B” qualifier was replaced with a “U”. The “J” qualifier, which indicates an estimated value because the result was between the MDL and RL was carried through to the database.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of the data is 100%, with the few exceptions noted above.

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Data Usability Summary Report (DUSR)
Delphi - Dort (MI) Field Event III
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Group # 4D02176

Analytical results for the project samples were reviewed to evaluate the data usability. Data was assessed in accordance with guidance from the following Federal and/or State guidance documents:

- USEPA National Functional Guidelines for Inorganic Data Review (EPA 540-R-1-008)
- USEPA National Functional Guidelines for Organic Data Review (EPA 540/R-99/008)

and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996.

This DUSR pertains to the following samples:

Sample ID	Sample ID
0894-040104-0001	GP4213-040504-1130
0894-040104-0002	GP4215-040504-1530
GP4280-040104-1030	GP4216-040504-1730
GP4280-040104-1046	GP4217-040604-1000
GP4282-040104-1430	GP4218-040604-1400
GP4282-040104-1500	0894-040604-0001
GP4283-040104-1545	GP4219-040604-1615
GP4284-040104-1630	GP4220-040604-1745
GP4284-040104-1640	
GP4285-040104-1700	
GP4285-040104-1715	
GP4212-040204-1215	
0894-040204-0001	

Project Samples were analyzed according to the following analytical methods:

	Parameter	Analytical Method	Holding Time Criteria
1.	Hexavalent Chromium	SW846 7196A	24 Hours
2.	Semi-volatile Organic Compounds by GC/MS (water/soil - Days Ext.)	SW846 8270C	7/14 Days Ext./40 Days Post Ext.
3.	Total Residue as Percent Solids	MCAWW 160.3 MOD	7 Days
4.	Trace Inductively Coupled Plasma Metals	SW846 6010B/6020	6 Months
5.	Volatile Organic Compounds by GC/MS (preserved)	SW846 8260B	14 Days

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- Holding Times
- GC/MS Instrument Performance Check
- Initial Calibration Procedures
- Continuing Calibration Procedures
- Blank Sample Analysis
- System Monitoring Compound Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Internal Standard Recoveries
- ICP Interference Check Sample Performance
- ICP Serial Dilution Replicate Percent Difference
- Sample Data Reporting Format
- Data Qualifiers
- Summary

Preservation and Holding Times

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group. No qualification of the data is recommended.

GC/MS Instrument Performance Check

GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. No qualification of the data is recommended.

Initial Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of VOCs (SW846 8260B), the initial calibration standards for the following target compound(s) exhibited a percent relative standard deviation (%RSD) greater than the acceptance criteria of 30% and/or a RRF less than 0.05:

Inst.	Date / Time	Target Analyte(s)	%RSD	RRF	Affected Sample(s)	Corrective Action
12	01/22/04 1802	Acetone	37.797	0.14941	GP4280-040104-1030 GP4280-040104-1046 GP4282-040104-1430 GP4282-040104-1500 GP4283-040104-1545 GP4284-040104-1630 GP4284-040104-1640 GP4285-040104-1700 GP4285-040104-1715	See Action #1 Below

Action #1
Positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

During the analysis of SVOCs (SW846 8270C), the initial calibration standards for the following target compound(s) exhibited a percent relative standard deviation (%RSD) greater than the acceptance criteria of 30% and/or a RRF less than 0.05:

Inst.	Date / Time	Target Analyte(s)	%RSD	RRF	Affected Sample(s)	Corrective Action
10	04/07/04 1028	2,4-Dinitrophenol	31.385	0.17536	0894-040104-0001	See Action #1 Below

Action #1
Positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

Continuing Calibration Procedures

Continuing calibration verification (CCV) procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of VOCs (SW846 8260B), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 25% and/or a RRF less than 0.05:

Inst.	Date / Time	Target Analyte(s)	%D	RRF	Affected Sample(s)	Corrective Action
12	04/08/04 1646	1,2,4-Trichlorobenzene	34	0.59946	GP4280-040104-1030 GP4280-040104-1046 GP4282-040104-1430 GP4285-040104-1715	See Action #1 Below

Action #1

Positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

Blank Sample Analysis

In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for metals and the common organic laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds. Target compounds were not detected in associated blank samples (trip, equipment, method) prepared and analyzed concurrently with the project samples, with the following exception(s):

Blank	Target Analyte(s)	Concn.	Affected Sample(s)	Flag sample results with a "U" if < to this value
0894-040104-0001 Equipment Blank	Acetone	5.4 ug/L	GP4280-040104-1030 GP4280-040104-1046 GP4282-040104-1430 GP4282-040104-1500 GP4283-040104-1545 GP4284-040104-1630 GP4284-040104-1640 GP4285-040104-1700 GP4285-040104-1715	54 ug/L
0894-040104-0002 Trip Blank	Acetone 2-Butanone	1.5 ug/L 1.6 ug/L	GP4280-040104-1030 GP4280-040104-1046 GP4282-040104-1430 GP4282-040104-1500 GP4283-040104-1545 GP4284-040104-1630 GP4284-040104-1640 GP4285-040104-1700 GP4285-040104-1715 0894-040104-0001	15 ug/L 16 ug/L

Blank	Target Analyte(s)	Concn.	Affected Sample(s)	Flag sample results with a "U" if < to this value
Method Blank I10, 04/07/04, 18:18	bis(2-Ethylhexyl)phthalate	0.9 ug/L	0894-040104-0001	9 ug/L

Blank	Target Analyte(s)	Concn.	Affected Sample(s)	Flag sample results with a "U" if < to this value
Method Blank Batch 4096139	Hexavalent Chromium	0.002 mg/L	0894-040104-0001	0.01 mg/L
Method Blank Batch 4098115	Hexavalent Chromium	0.004 mg/L	GP4213-040504-1130 GP4215-040504-1530 GP4216-040504-1730	0.02 mg/L
Equipment Blank 0894-040104-0001	Hexavalent Chromium	0.002 mg/L	GP4280-040104-1030 GP4280-040104-1046 GP4282-040104-1430 GP4282-040104-1500 GP4283-040104-1545 GP4284-040104-1630 GP4284-040104-1640 GP4285-040104-1700 GP4285-040104-1715	0.01 mg/L

System Monitoring Compound Recoveries

System monitoring/surrogate compounds are added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C, and/or 8082 to confirm the efficiency of the sample preparation procedure. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. The calculated recovery of these compounds fell within the laboratory specific quality control criteria, with the following exception(s):

Surrogate Percent Recovery Criteria			
Surrogate		**Aqueous Matrix (%)**	**Solid Matrix (%)**
Dibromofluoromethane	S01	low high	59 - 138
1,2-Dichloroethane-d4	S02	low high	61 - 130
Toluene-d8	S03	low high	60 - 143
4-Bromofluorobenzene	S04	low high	47 - 158

Project Sample ID	Matrix	S01 %R	S02 %R	S03 %R	S04 %R	Positive Results	Non Detect (ND)
GP4282-040104-1500	Soil	71	0	88	82	J	R
GP4285-040104-1715	Soil	0	0	83	80	J	R

Affected Analytes

All VOC target analytes in identified project sample(s).

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS/MSD and LCS analyses fell within the laboratory QA acceptance criteria. No qualification of the data is recommended.

Internal Standard Recoveries

Internal Standard compounds were added to each sample matrix prior to the analysis of organic parameters by EPA Methods 8260B and/or 8270C to quantify the amount of the target compounds detected within each sample. The calculated response of each IS compound fell within the QA/QC criteria of +100% and – 50% of the corresponding CCV standard. No qualification of the data is recommended.

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were all within the acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. No qualification of the data is recommended.

ICP Serial Dilution Replicate Percent Difference

The results of the ICP Serial Dilution samples analyzed concurrently with the project samples were in accordance with the EPA QA acceptance criteria of less than 10% RPD for those target analytes with sample concentrations >50X the MDL. No qualification of the data is recommended.

Sample Data Reporting Format

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format. The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting format is complete and compliant with the objectives of the project. No qualification of the data is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target analytes detected below the reporting limit but above the method detection limit, and/or when target analytes were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Organic analyses samples that contained concentrations of target analytes at a reportable level in the associated method blanks were flagged by the laboratory with a “B”. If the target analyte concentration was greater than 10 times (10X) the amount in any blank for the common laboratory contaminants or 5 times (5X) the amount for other target compounds, the “B” qualifier was not carried forward for database input; if less than the 10X or 5X rule the “B” qualifier was replaced with a “U”. The “J” qualifier, which indicates an estimated value because the result was between the MDL and RL was carried through to the database.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of the data is 100%, with the few exceptions noted above.

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Data Usability Summary Report (DUSR)
Delphi - Dort (MI) Field Event III
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Group # 4D06208

Analytical results for the project samples were reviewed to evaluate the data usability. Data was assessed in accordance with guidance from the following Federal and/or State guidance documents:

- USEPA National Functional Guidelines for Inorganic Data Review (EPA 540-R-1-008)
- USEPA National Functional Guidelines for Organic Data Review (EPA 540/R-99/008)

and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996.

This DUSR pertains to the following samples:

Sample ID	Sample ID
0916-040504-0001	MW4647M-040804-1015
MW4628S-040504-1210	MW4009D-040804-1430
MW4628D-040504-1420	MW4419-040804-1320
MW4627D-040504-1545	0916-041204-0001
0916-040604-0001	MW4009D-041204-1245
MW4627S-040604-1035	MW4010-041204-1400
MW4646M-040604-1430	MW4419-041204-1520
MW4646D-040604-1600	0916-041204-0002
0916-040704-0001	MW4010-040904-1140
MW4630M2-040704-1230	
MW4647D-040704-1510	
0916-040804-0001	
0916-040804-0002	

Project Samples were analyzed according to the following analytical methods:

	Parameter	Analytical Method	Holding Time Criteria
1.	Volatile Organic Compounds by GC/MS (preserved)	SW846 8260B	14 Days
2.	Semi-volatile Organic Compounds by GC/MS (water/soil - Days	SW846 8270C	7/14 Days Ext./40 Days Post Ext.
3.	Trace Inductively Coupled Plasma Metals	SW846 6010B/6020	6 Months

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- Holding Times
- GC/MS Instrument Performance Check
- Initial Calibration Procedures
- Continuing Calibration Procedures
- Blank Sample Analysis
- System Monitoring Compound Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Internal Standard Recoveries
- ICP Interference Check Sample Performance
- Sample Data Reporting Format
- Data Qualifiers
- Summary

Preservation and Holding Times

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group. No qualification of the data is recommended.

GC/MS Instrument Performance Check

GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. No qualification of the data is recommended.

Initial Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of VOCs (SW846 8260B), the initial calibration standards for the following target compound(s) exhibited a percent relative standard deviation (%RSD) greater than the acceptance criteria of 30% and/or a RRF less than 0.05:

Inst.	Date / Time	Target Analyte(s)	%RSD	RRF	Affected Sample(s)	Corrective Action
12	01/22/04 1802	Acetone	37.797		0916-040504-0001 MW4628S-040504-1210 MW4628D-040504-1420 MW4627D-040504-1545 0916-040804-0001 0916-040804-0002 MW4647M-040804-1015 MW4009D-040804-1430 MW4419-040804-1320 0916-041204-0001 MW4010-040904-1140	See Action #1 Below

Action #1
Positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

Continuing Calibration Procedures

Continuing calibration verification (CCV) procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of VOCs (SW846 8260B), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 25% and/or a RRF less than 0.05:

Inst.	Date / Time	Target Analyte(s)	%D	RRF	Affected Sample(s)	Corrective Action
11	04/15/04 0817	Dichlorodifluoromethane 2-Hexanone Bromoform Methyl acetate	45.8 33.9 45.2 25.7	0.07827 100 0.1351 0.19366	0916-040604-0001 0916-040704-0001 MW4630M2-040704-1230 MW4647D-040704-	See Action #1 Below See Action #1 Below See Action #1 Below See Action #1 Below
10	04/14/04 2210	Chloroform Trichlorofluoromethane	25.3 30.4	0.3128 0.31156	MW4627S-040604- MW4646M-040604-1430 MW4646D-040604-	See Action #1 Below See Action #1 Below
12	04/13/04 1525	Acetone Methyl tert-butyl ether 1,2-Dibromo-3-chloropropane 1,2,4-Trichlorobenzene	25.3 38.5 27.7 37.7	100 0.60089 50 0.59946	0916-040504-0001 MW4628S-040504- MW4628D-040504- MW4627D-040504-	See Action #1 Below See Action #1 Below See Action #1 Below See Action #1 Below
12	04/16/04 1651	Acetone Methyl tert-butyl ether	34.4 40.1	100 0.60089	0916-040804-0001 0916-040804-0002 MW4647M-040804-1015 MW4009D-040804- MW4419-040804-1320	See Action #1 Below See Action #1 Below
12	04/18/04 1706	Bromomethane Methyl tert-butyl ether	25.2 41.7	0.21224 0.60089	0916-041204-0001 MW4010-040904-1140	See Action #1 Below See Action #1 Below

Action #1
Positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

Blank Sample Analysis

In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for metals and the common organic laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds. Target compounds were not detected in associated blank samples (trip, equipment, method) prepared and analyzed concurrently with the project samples, with the following exception(s):

Blank	Target Analyte(s)	Concn.	Affected Sample(s)	Flag sample results with a "U" if < to this value
0916-040504-0001 Trip Blank	Acetone 2-Butanone	2.2 ug/L 1.4 ug/L	MW4628S-040504- MW4628D-040504- MW4627D-040504-	22 ug/L 14 ug/L
0916-040604-0001 Trip Blank	Acetone	0.76 ug/L	MW4627S-040604- MW4646M-040604-1430 MW4646D-040604-	7.6 ug/L
0916-040704-0001 Trip Blank	Acetone	0.83 ug/L	MW4630M2-040704-1230 MW4647D-040704-	8.3 ug/L
0916-040804-0001 Trip Blank	Acetone 2-Butanone	2.1 ug/L 1.9 ug/L	0916-040804-0002 MW4647M-040804-1015 MW4009D-040804- MW4419-040804-1320	21 ug/L 19 ug/L
0916-040804-0002 Equipment Blank	Chloroform Methylene chloride	0.37 ug/L 1.1 ug/L	MW4647M-040804-1015 MW4009D-040804- MW4419-040804-1320	1.85 ug/L 11 ug/L
0916-041204-0001 Trip Blank	Acetone 2-Butanone	2 ug/L 1.3 ug/L	MW4010-040904-1140	20 ug/L 13 ug/L
Method Blank I11, 04/15/04, 09:50	Methylene chloride	1 ug/L	0916-040604-0001 0916-040704-0001 MW4630M2-040704-1230 MW4647D-040704-	10 ug/L
Method Blank I12, 04/13/04, 16:59	Methylene chloride	0.69 ug/L	0916-040504-0001 MW4628S-040504- MW4628D-040504- MW4627D-040504-	6.9 ug/L

System Monitoring Compound Recoveries

System monitoring/surrogate compounds are added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C, and/or 8082 to confirm the efficiency of the sample preparation procedure. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. The calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts required dilution prior to analysis to either improve instrument performance by minimizing matrix interference or enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. No qualification of the data is recommended.

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS/MSD and LCS analyses fell within the laboratory QA acceptance criteria, with the following exception(s):

LCS ID / Project Sample MS	Target Analyte(s)	%R Criteria	%R	Affected Sample(s)
MW4627S-040604-1035	Trichloroethene	62 - 130	51	MW4628S-040504-1210 MW4628D-040504-1420 MW4627D-040504-1545 MW4627S-040604-1035 MW4646M-040604-1430 MW4646D-040604-1600 MW4630M2-040704-1230 MW4647D-040704-1510 MW4647M-040804-1015 MW4009D-040804-1430 MW4419-040804-1320 MW4010-040904-1140

Action:
If the LCS %R is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the LCS %R is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "R". If the MS/MSD is from a project sample use the same rules as the LCS/LCSD and apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

Internal Standard Recoveries

Internal Standard compounds were added to each sample matrix prior to the analysis of organic parameters by EPA Methods 8260B and/or 8270C to quantify the amount of the target compounds detected within each sample. The calculated response of each IS compound fell within the QA/QC criteria of +100% and – 50% of the corresponding CCV standard. No qualification of the data is recommended.

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were all within the acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. No qualification of the data is recommended.

Sample Data Reporting Format

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format. The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting format is complete and compliant with the objectives of the project. No qualification of the data is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target analytes detected below the reporting limit but above the method detection limit, and/or when target analytes were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Organic analyses samples that contained concentrations of target analytes at a reportable level in the associated method blanks were flagged by the laboratory with a "B". If the target analyte concentration was greater than 10 times (10X) the amount in any blank for the common laboratory contaminants or 5 times (5X) the amount for other target compounds, the "B" qualifier was not carried forward for database input; if less than the 10X or 5X rule the "B" qualifier was replaced with a "U". The "J" qualifier, which indicates an estimated value because the result was between the MDL and RL was carried through to the database.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of the data is 100%, with the few exceptions noted above.

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Data Usability Summary Report (DUSR)
Delphi - Dort (MI) Field Event III
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Group # 4D08178

Analytical results for the project samples were reviewed to evaluate the data usability. Data was assessed in accordance with guidance from the following Federal and/or State guidance documents:

- USEPA National Functional Guidelines for Inorganic Data Review (EPA 540-R-1-008)
- USEPA National Functional Guidelines for Organic Data Review (EPA 540/R-99/008)

and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996.

This DUSR pertains to the following samples:

Sample ID
GP4286-040704-0915
GP4287-040704-1145
GP4289-040704-1445
GP4301-040704-1800
GP4302-040704-1915
GP4290-040804-0900
GP4291-040804-0945
0894-040804-0001
GP4293-040804-1430
GP4294-040804-1545
0894-040804-0002

Project Samples were analyzed according to the following analytical methods:

	Parameter	Analytical Method	Holding Time Criteria
1.	Total Residue as Percent Solids	MCAWW 160.3 MOD	7 Days
2.	Volatile Organic Compounds by GC/MS (preserved)	SW846 8260B	14 Days
3.	Hexavalent Chromium	SW846 7196A	24 Hours
4.	Trace Inductively Coupled Plasma Metals	SW846 6010B/6020	6 Months

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- Holding Times
- GC/MS Instrument Performance Check
- Initial Calibration Procedures
- Continuing Calibration Procedures
- Blank Sample Analysis
- System Monitoring Compound Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Internal Standard Recoveries
- Duplicate Sample Analysis
- ICP Interference Check Sample Performance
- Sample Data Reporting Format
- Data Qualifiers
- Summary

Preservation and Holding Times

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group. No qualification of the data is recommended.

GC/MS Instrument Performance Check

GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. No qualification of the data is recommended.

Initial Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of VOCs (SW846 8260B), the initial calibration standards for the following target compound(s) exhibited a percent relative standard deviation (%RSD) greater than the acceptance criteria of 30% and/or a RRF less than 0.05:

Inst.	Date / Time	Target Analyte(s)	%RSD	RRF	Affected Sample(s)	Corrective Action
12	01/22/04 1802	Acetone	37.797	0.14941	GP4286-040704-0915 GP4287-040704-1145 GP4289-040704-1445 GP4301-040704-1800 GP4290-040804-0900 GP4291-040804-0945 0894-040804-0001 GP4293-040804-1430 GP4294-040804-1545	See Action #1 Below

Action #1
Positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

Continuing Calibration Procedures

Continuing calibration verification (CCV) procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of VOCs (SW846 8260B), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 25% and/or a RRF less than 0.05:

Inst.	Date / Time	Target Analyte(s)	%D	RRF	Affected Sample(s)	Corrective Action
7	04/15/04 0957	Bromomethane	27.7	0.22667	0894-040804-0002	See Action #1 Below
		Chloroethane	29.4	0.19657		See Action #1 Below
		Trichlorofluoromethane	32.6	0.34402		See Action #1 Below
		Carbon disulfide	31.3	0.75353		See Action #1 Below
		2-Hexanone	31.4	0.22629		See Action #1 Below
10	04/14/04 2210	Chloromethane	25.3	0.3128	GP4302-040704-1915	See Action #1 Below
		Trichlorofluoromethane	30.4	0.31156		See Action #1 Below
12	04/20/04 0601	Acetone	29.4	100	GP4286-040704-0915	See Action #1 Below
		Methyl tert-butyl ether	64.5	0.60089	GP4287-040704-1145	See Action #1 Below
					GP4289-040704-1445	
					GP4301-040704-1800	
					GP4290-040804-0900	
					GP4291-040804-0945	
					0894-040804-0001	
					GP4293-040804-1430	
					GP4294-040804-1545	

Action #1
Positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

Blank Sample Analysis

In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for metals and the common organic laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds. Target compounds were not detected in associated blank samples (trip, equipment, method) prepared and analyzed concurrently with the project samples, with the following exception(s):

Blank	Target Analyte(s)	Concn.	Affected Sample(s)	Flag sample results with a "U" if < to this value
0916-040704-0001 Trip Blank	Acetone	0.83 ug/L	GP4286-040704-0915 GP4287-040704-1145 GP4289-040704-1445 GP4301-040704-1800 GP4302-040704-1915	8.3 ug/L
0916-040804-0001 Trip Blank	Acetone 2-Butanone	2.1 ug/L 1.9 ug/L	GP4290-040804-0900 GP4291-040804-0945 GP4294-040804-1545 0894-040804-0001 GP4293-040804-1430 0894-040804-0002	21 ug/L 19 ug/L
0894-040804-0002 Equipment Blank	Acetone	7.6 ug/L	GP4290-040804-0900 GP4291-040804-0945 0894-040804-0001 GP4293-040804-1430 GP4294-040804-1545	76 ug/L
Method Blank I7, 04/15/04, 11:32	Acetone Methylene chloride	0.73 ug/L 0.77 ug/L	0894-040804-0002	7.3 ug/L 7.7 ug/L

System Monitoring Compound Recoveries

System monitoring/surrogate compounds are added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C, and/or 8082 to confirm the efficiency of the sample preparation procedure. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. The calculated recovery of these compounds fell within the laboratory specific quality control criteria, with the following exception(s):

Surrogate Percent Recovery Criteria			
Surrogate		**Aqueous Matrix (%)**	**Solid Matrix (%)**
Dibromofluoromethane	S01	low high	59 - 138
1,2-Dichloroethane-d4	S02	low high	61 - 130
Toluene-d8	S03	low high	60 - 143
4-Bromofluorobenzene	S04	low high	47 - 158

Project Sample ID	Matrix	S01 %R	S02 %R	S03 %R	S04 %R	Positive Results	Non Detect (ND)
GP4286-040704-0915	Soil	0	0	8.8	11	J	R
GP4287-040704-1145	Soil	70	0	78	67	J	R
GP4294-040804-1545	Soil	0	0	7.6	0	J	R

Affected Analytes

All VOC target analytes in identified project sample(s).

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS/MSD and LCS analyses fell within the laboratory QA acceptance criteria. No qualification of the data is recommended.

Internal Standard Recoveries

Internal Standard compounds were added to each sample matrix prior to the analysis of organic parameters by EPA Methods 8260B and/or 8270C to quantify the amount of the target compounds detected within each sample. The calculated response of each IS compound fell within the QA/QC criteria of +100% and – 50% of the corresponding CCV standard. No qualification of the data is recommended.

Duplicate Sample Analysis

The replicate percent difference (RPD) was evaluated for each duplicate sample pair to monitor the reproducibility of the data. The RPD for each sample pair was within the QA/QC limit of 30% for aqueous samples and 50% for solid matrices, for those target analytes with sample concentrations >5X the MDL. No qualification of the data is recommended.

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were all within the acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. No qualification of the data is recommended.

Sample Data Reporting Format

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format. The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting format is complete and compliant with the objectives of the project. No qualification of the data is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target analytes detected below the reporting limit but above the method detection limit, and/or when target analytes were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Organic analyses samples that contained concentrations of target analytes at a reportable level in the associated method blanks were flagged by the laboratory with a “B”. If the target analyte concentration was greater than 10 times (10X) the amount in any blank for the common laboratory contaminants or 5 times (5X) the amount for other target compounds, the “B” qualifier was not carried forward for database input; if less than the 10X or 5X rule the “B” qualifier was replaced with a “U”. The “J” qualifier, which indicates an estimated value because the result was between the MDL and RL was carried through to the database.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of the data is 100%, with the few exceptions noted above.

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Data Usability Summary Report (DUSR)
Delphi - Dort (MI) Field Event III
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Group # 4D15128

Analytical results for the project samples were reviewed to evaluate the data usability. Data was assessed in accordance with guidance from the following Federal and/or State guidance documents:

- USEPA National Functional Guidelines for Inorganic Data Review (EPA 540-R-1-008)
- USEPA National Functional Guidelines for Organic Data Review (EPA 540/R-99/008)

and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996.

This DUSR pertains to the following samples:

Sample ID
GP4221-041404-1130
GP4222-041404-1545
GP4223-041404-1745
GP4295-041504-0945
0894-041504-0001
GP4296-041504-1045
0894-041504-0002
GP4297-041504-1215
GP4298-041504-1545
GP4299-041504-1715
0894-041404-0001

Project Samples were analyzed according to the following analytical methods:

	Parameter	Analytical Method	Holding Time Criteria
1.	Hexavalent Chromium	SW846 7196A	24 Hours
2.	Trace Inductively Coupled Plasma Metals	SW846 6010B/6020	6 Months
3.	Total Residue as Percent Solids	MCAWW 160.3 MOD	7 Days
4.	Volatile Organic Compounds by GC/MS (preserved)	SW846 8260B	14 Days

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- Holding Times
- GC/MS Instrument Performance Check
- Initial Calibration Procedures
- Continuing Calibration Procedures
- Blank Sample Analysis
- System Monitoring Compound Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Internal Standard Recoveries
- Duplicate Sample Analysis
- ICP Interference Check Sample Performance
- ICP Serial Dilution Replicate Percent Difference
- Sample Data Reporting Format
- Data Qualifiers
- Summary

Preservation and Holding Times

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group. No qualification of the data is recommended.

GC/MS Instrument Performance Check

GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. No qualification of the data is recommended.

Initial Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of VOCs (SW846 8260B), the initial calibration standards for the following target compound(s) exhibited a percent relative standard deviation (%RSD) greater than the acceptance criteria of 30% and/or a RRF less than 0.05:

Inst.	Date / Time	Target Analyte(s)	%RSD	RRF	Affected Sample(s)	Corrective Action
12	01/22/04 1802	Acetone	37.797	0.14941	GP4295-041504-0945 GP4296-041504-1045 0894-041504-0002 GP4297-041504-1215 GP4298-041504-1545 GP4299-041504-1715	See Action #1 Below

Action #1
Positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

Continuing Calibration Procedures

Continuing calibration verification (CCV) procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of VOCs (SW846 8260B), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 25% and/or a RRF less than 0.05:

Inst.	Date / Time	Target Analyte(s)	%D	RRF	Affected Sample(s)	Corrective Action
11	04/22/04 0948	Dichlorodifluoromethane	41	0.07827	0894-041504-0001	See Action #1 Below
		Bromoform	32.5	0.1351		See Action #1 Below
		1,2,4-Trichlorobenzene	30.9	0.88556		See Action #1 Below
12	04/26/04 0553	Methyl tert-butyl ether	64	0.60089	GP4295-041504-0945	See Action #1 Below
		1,2-Dibromo-3-chloropropane	29	50	GP4296-041504-1045	See Action #1 Below
					0894-041504-0002	
					GP4297-041504-1215	
					GP4298-041504-1545	
					GP4299-041504-1715	

Action #1
Positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

Blank Sample Analysis

In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for metals and the common organic laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds. Target compounds were not detected in associated blank samples (trip, equipment, method) prepared and analyzed concurrently with the project samples, with the following exception(s):

				Flag sample results

Blank	Target Analyte(s)	Concn.	Affected Sample(s)	with a "U" if < to this value
0894-041504-0001 Trip Blank	Acetone	0.94 ug/L	GP4295-041504-0945 GP4296-041504-1045 0894-041504-0002 GP4297-041504-1215 GP4298-041504-1545 GP4299-041504-1715	9.4 ug/L
Method Blank I11, 04/22/04, 10:35	Acetone Benzene Methylene chloride	0.68 ug/L 0.35 ug/L 0.8 ug/L	0894-041504-0001	6.8 ug/L 1.75 ug/L 8 ug/L

Blank	Target Analyte(s)	Concn.	Affected Sample(s)	Flag sample results with a "U" if < to this value
Method Blank I6, 04/15/04, 21:26	Chromium	0.002 mg/L	GP4221-041404-1130 GP4222-041404-1545 GP4223-041404-1745	0.02 mg/L

System Monitoring Compound Recoveries

System monitoring/surrogate compounds are added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C, and/or 8082 to confirm the efficiency of the sample preparation procedure. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. The calculated recovery of these compounds fell within the laboratory specific quality control criteria, with the following exception(s):

Surrogate Percent Recovery Criteria			
Surrogate		**Aqueous Matrix (%)**	**Solid Matrix (%)**
Dibromofluoromethane	S01	low high	59 - 138
1,2-Dichloroethane-d4	S02	low high	61 - 130
Toluene-d8	S03	low high	60 - 143
4-Bromofluorobenzene	S04	low high	47 - 158

Project Sample ID	Matrix	S01 %R	S02 %R	S03 %R	S04 %R	Positive Results	Non Detect (ND)
GP4297-041504-1215	Soil	72	0	86	82	J	R
GP4298-041504-1545	Soil	0	0	3.4	7.8	J	R

Affected Analytes

All VOC target analytes in identified project sample(s).

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS/MSD and LCS analyses fell within the laboratory QA acceptance criteria. No qualification of the data is recommended.

Internal Standard Recoveries

Internal Standard compounds were added to each sample matrix prior to the analysis of organic parameters by EPA Methods 8260B and/or

8270C to quantify the amount of the target compounds detected within each sample. The calculated response of each IS compound fell within the QA/QC criteria of +100% and – 50% of the corresponding CCV standard. No qualification of the data is recommended.

Duplicate Sample Analysis

The replicate percent difference (RPD) was evaluated for each duplicate sample pair to monitor the reproducibility of the data. The RPD for each sample pair was within the QA/QC limit of 30% for aqueous samples and 50% for solid matrices, for those target analytes with sample concentrations >5X the MDL. No qualification of the data is recommended.

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were all within the acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. No qualification of the data is recommended.

ICP Serial Dilution Replicate Percent Difference

The results of the ICP Serial Dilution samples analyzed concurrently with the project samples were in accordance with the EPA QA acceptance criteria of less than 10% RPD for those target analytes with sample concentrations >50X the MDL. No qualification of the data is recommended.

Sample Data Reporting Format

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format. The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting format is complete and compliant with the objectives of the project. No qualification of the data is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target analytes detected below the reporting limit but above the method detection limit, and/or when target analytes were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Organic analyses samples that contained concentrations of target analytes at a reportable level in the associated method blanks were flagged by the laboratory with a “B”. If the target analyte concentration was greater than 10 times (10X) the amount in any blank for the common laboratory contaminants or 5 times (5X) the amount for other target compounds, the “B” qualifier was not carried forward for database input; if less than the 10X or 5X rule the “B” qualifier was replaced with a “U”. The “J” qualifier, which indicates an estimated value because the result was between the MDL and RL was carried through to the database.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of the data is 100%, with the few exceptions noted above.

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Data Usability Summary Report (DUSR)
Delphi - Dort (MI) Field Event III
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Group # A4D150181

Analytical results for the project samples were reviewed to evaluate the data usability. Data was assessed in accordance with guidance from the following Federal and/or State guidance documents:

- USEPA National Functional Guidelines for Inorganic Data Review (EPA 540-R-1-008)
- USEPA National Functional Guidelines for Organic Data Review (EPA 540/R-99/008)

and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996.

This DUSR pertains to the following samples:

Sample ID
MW4638S-041404-
MW4646S-041404-
0920-041404-0001
MW4420-041404-1430
MW4647S-041404-

Project Samples were analyzed according to the following analytical methods:

	Parameter	Analytical Method	Holding Time Criteria
1.	Hexavalent Chromium	SW846 7196A	24 Hours
2.	Semi-volatile Organic Compounds by GC/MS (water/soil - Days	SW846 8270C	7/14 Days Ext./40 Days Post Ext.
3.	Trace Inductively Coupled Plasma Metals	SW846 6010B/6020	6 Months
4.	Volatile Organic Compounds by GC/MS (preserved)	SW846 8260B	14 Days

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- Holding Times
- GC/MS Instrument Performance Check
- Initial Calibration Procedures
- Continuing Calibration Procedures
- Blank Sample Analysis
- System Monitoring Compound Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Internal Standard Recoveries
- ICP Interference Check Sample Performance
- Sample Data Reporting Format
- Data Qualifiers
- Summary

Preservation and Holding Times

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group. No qualification of the data is recommended.

GC/MS Instrument Performance Check

GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. No qualification of the data is recommended.

Initial Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of SVOCs (SW846 8270C), the initial calibration standards for the following target compound(s) exhibited a percent relative standard deviation (%RSD) greater than the acceptance criteria of 30% and/or a RRF less than 0.05:

Inst.	Date / Time	Target Analyte(s)	%RSD	RRF	Affected Sample(s)	Corrective Action
6	04/19/04 0837	Benzaldehyde	30.363	1.41636	MW4420-041404-	See Action #1 Below

Action #1
Positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

Continuing Calibration Procedures

Continuing calibration verification (CCV) procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols. No Qualification of the data is recommended.

Blank Sample Analysis

In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for metals and the common organic laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds. Target compounds were not detected in associated blank samples (trip, equipment, method) prepared and analyzed concurrently with the project samples, with the following exception(s):

Blank	Target Analyte(s)	Concn.	Affected Sample(s)	Flag sample results with a "U" if < to this value
0920-041404-0001 Trip Blank	Acetone	0.75 ug/L	MW4646S-041404-1230 MW4420-041404-1430 MW4647S-041404-1600	7.5 ug/L

System Monitoring Compound Recoveries

System monitoring/surrogate compounds are added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C, and/or 8082 to confirm the efficiency of the sample preparation procedure. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. The calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts required dilution prior to analysis to either improve instrument performance by minimizing matrix interference or enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. No qualification of the data is recommended.

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS/MSD and LCS analyses fell within the laboratory QA acceptance criteria. No qualification of the data is recommended.

Internal Standard Recoveries

Internal Standard compounds were added to each sample matrix prior to the analysis of organic parameters by EPA Methods 8260B and/or 8270C to quantify the amount of the target compounds detected within each sample. The calculated response of each IS compound fell within the QA/QC criteria of +100% and – 50% of the corresponding CCV standard. No qualification of the data is recommended.

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were all within the acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. No qualification of the data is recommended.

Sample Data Reporting Format

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format. The data package has been reviewed for

completeness and found to contain each required sample result and associated QA/QC report form. The reporting format is complete and compliant with the objectives of the project. No qualification of the data is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target analytes detected below the reporting limit but above the method detection limit, and/or when target analytes were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Organic analyses samples that contained concentrations of target analytes at a reportable level in the associated method blanks were flagged by the laboratory with a “B”. If the target analyte concentration was greater than 10 times (10X) the amount in any blank for the common laboratory contaminants or 5 times (5X) the amount for other target compounds, the “B” qualifier was not carried forward for database input; if less than the 10X or 5X rule the “B” qualifier was replaced with a “U”. The “J” qualifier, which indicates an estimated value because the result was between the MDL and RL was carried through to the database.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of the data is 100%, with the few exceptions noted above.

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Data Usability Summary Report (DUSR)
Delphi - Dort (MI) Field Event III
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Group # A4D230146

Analytical results for the project samples were reviewed to evaluate the data usability. Data was assessed in accordance with guidance from the following Federal and/or State guidance documents:

- USEPA National Functional Guidelines for Inorganic Data Review (EPA 540-R-1-008)

and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996.

This DUSR pertains to the following samples:

Sample ID
MW4661S-042104-1130
MW4663S-042104-1330
0920-042104-0002
MW4662S-042104-1440
0920-042104-0003

Project Samples were analyzed according to the following analytical methods:

	Parameter	Analytical Method	Holding Time Criteria
1.	Hexavalent Chromium	SW846 7196A	24 Hours
2.	Trace Inductively Coupled Plasma Metals	SW846 6010B/6020	6 Months

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- Holding Times
- Initial Calibration Procedures
- Continuing Calibration Procedures
- Blank Sample Analysis
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- ICP Interference Check Sample Performance
- Sample Data Reporting Format
- Data Qualifiers
- Summary

Preservation and Holding Times

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group, with the following exception(s):

During the analysis of general parameters preservation and/or technical holding times were exceeded for project samples shown below. Sample results should be qualified according to the actions specified in the following table:

Lab ID	Sample ID	Matrix	Action
A4D230146-001	MW4661S-042104-1130	WG	See Action #1 Below
A4D230146-003	MW4663S-042104-1330	WG	See Action #1 Below
A4D230146-004	0920-042104-0002	WG	See Action #1 Below
A4D230146-005	MW4662S-042104-1440	WG	See Action #1 Below
A4D230146-006	0920-042104-0003	WQ	See Action #1 Below

Action #1
Hexavalent Chromium: Positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

Initial Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols. No Qualification of the data is recommended.

Continuing Calibration Procedures

Continuing calibration verification (CCV) procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols. No Qualification of the data is recommended.

Blank Sample Analysis

In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for metals and the common organic laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds. Target compounds were not detected in associated blank samples (trip, equipment, method) prepared and analyzed concurrently with the project samples, with the following exception(s):

Blank	Target Analyte(s)	Concn.	Affected Sample(s)	Flag sample results with a "U" if < to this value
Method Blank Batch 4117091	Hexavalent Chromium	0.002 mg/L	MW4661S-042104-1130 MW4663S-042104-1330 0920-042104-0002 MW4662S-042104-1440 0920-042104-0003	0.01 mg/L
0920-042104-0003 Equipment Blank	Hexavalent Chromium	0.002 mg/L	MW4661S-042104-1130 MW4663S-042104-1330 0920-042104-0002 MW4662S-042104-1440	0.01 mg/L

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS/MSD and LCS analyses fell within the laboratory QA acceptance criteria. No qualification of the data is recommended.

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were all within the acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. No qualification of the data is recommended.

Field Replicate Percent Difference

The replicate percent difference was evaluated for each field duplicate sample pair in order to monitor the precision or reproducibility of the data. The RPD for each sample pair was outside the QA/QC limit of 50% for soil samples. Positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated undetected.

Sample Data Reporting Format

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format. The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting format is complete and compliant with the objectives of the project. No qualification of the data is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target analytes detected below the reporting limit but above the method detection limit, and/or when target analytes were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Organic analyses samples that contained concentrations of target analytes at a reportable level in the associated method blanks were flagged by the laboratory with a “B”. If the target analyte concentration was greater than 10 times (10X) the amount in any blank for the common laboratory contaminants or 5 times (5X) the amount for other target compounds, the “B” qualifier was not carried forward for database input; if less than the 10X or 5X rule the “B” qualifier was replaced with a “U”. The “J” qualifier, which indicates an estimated value because the result was between the MDL and RL was carried through to the database.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of the data is 100%, with the few exceptions noted above.

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Data Usability Summary Report (DUSR)
Delphi - Dort (MI) Field Event III
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Group # A4E060224

Analytical results for the project samples were reviewed to evaluate the data usability. Data was assessed in accordance with guidance from the following Federal and/or State guidance documents:

- USEPA National Functional Guidelines for Inorganic Data Review (EPA 540-R-1-008)
- USEPA National Functional Guidelines for Organic Data Review (EPA 540/R-99/008)

and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996.

This DUSR pertains to the following samples:

Sample ID
B4111-050504-0840
B4111-050504-0850
B4111-050504-0940
0763-050504-0001

Project Samples were analyzed according to the following analytical methods:

	Parameter	Analytical Method	Holding Time Criteria
1.	Total Residue as Percent Solids	EPA 160.3 MOD	7 Days
2.	Volatile Organic Compounds by GC/MS (preserved)	SW846 8260B	14 Days

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- Holding Times
- GC/MS Instrument Performance Check
- Initial Calibration Procedures
- Continuing Calibration Procedures
- Blank Sample Analysis
- System Monitoring Compound Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Internal Standard Recoveries
- Duplicate Sample Analysis
- Sample Data Reporting Format
- Data Qualifiers
- Summary

Preservation and Holding Times

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group. No qualification of the data is recommended.

GC/MS Instrument Performance Check

GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. No qualification of the data is recommended.

Initial Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of VOCs (SW846 8260B), the initial calibration standards for the following target compound(s) exhibited a percent relative standard deviation (%RSD) greater than the acceptance criteria of 30% and/or a RRF less than 0.05:

Inst.	Date / Time	Target Analyte(s)	%RSD	RRF	Affected Sample(s)	Corrective Action
12	01/22/04 1802	Acetone	37.797	0.14941	B4111-050504-0840 B4111-050504-0850 B4111-050504-0940 0763-050504-0001	See Action #1 Below

Action #1
Positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated detection limit.

Continuing Calibration Procedures

Continuing calibration verification (CCV) procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of VOCs (SW846 8260B), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 25% and/or a RRF less than 0.05:

Inst.	Date / Time	Target Analyte(s)	%D	RRF	Affected Sample(s)	Corrective Action
12	05/11/04 0406	Trichlorofluoromethane	38.7	0.41928	B4111-050504-0840	See Action #1 Below
		Methyl tert-butyl ether	37	0.60089	B4111-050504-0850	See Action #1 Below
		2-Butanone	29.3	0.16222		See Action #1 Below
		2-Hexanone	28.8	100		See Action #1 Below
		1,2-Dibromo-3-chloropropane	29	50		See Action #1 Below
12	05/12/04 1627	Trichlorofluoromethane	42.9	0.41928	B4111-050504-0940	See Action #1 Below
		Acetone	28.2	100	0763-050504-0001	See Action #1 Below
		Methyl tert-butyl ether	39.5	0.60089		See Action #1 Below
		Bromoform	29.2	50		See Action #1 Below
		1,2-Dibromo-3-chloropropane	37.9	50		See Action #1 Below

Action #1
Positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated detection limit.

Blank Sample Analysis

In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for metals and the common organic laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds. Target compounds were not detected in associated blank samples (trip, equipment, method) prepared and analyzed concurrently with the project samples, with the following exception(s):

Blank	Target Analyte(s)	Concn.	Affected Sample(s)	Flag sample results with a "U" if < to this value
I12, 05/12/04, 18:02	Acetone	1.1 ug/L	B4111-050504-0940	11 ug/L
Method Blank, Aq	Methylene chloride	0.64 ug/L	0763-050504-0001	6.4 ug/L

System Monitoring Compound Recoveries

System monitoring/surrogate compounds are added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C, and/or 8082 to confirm the efficiency of the sample preparation procedure. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. The calculated recovery of these compounds fell within the laboratory specific

[illegible] quality control criteria. In a few instances, sample extracts required dilution prior to analysis to either improve instrument performance by minimizing matrix interference or enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. No qualification of the data is recommended.

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS/MSD and LCS analyses fell within the laboratory QA acceptance criteria. No qualification of the data is recommended.

Internal Standard Recoveries

Internal Standard compounds were added to each sample matrix prior to the analysis of organic parameters by EPA Methods 8260B and/or 8270C to quantify the amount of the target compounds detected within each sample. The calculated response of each IS compound fell within the QA/QC criteria of +100% and – 50% of the corresponding CCV standard. No qualification of the data is recommended.

Duplicate Sample Analysis

The replicate percent difference (RPD) was evaluated for each duplicate sample pair to monitor the reproducibility of the data. The RPD for each sample pair was within the QA/QC limit of 30% for aqueous samples and 50% for solid matrices, for those target analytes with sample concentrations >5X the MDL. No qualification of the data is recommended.

Sample Data Reporting Format

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format. The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting format is complete and compliant with the objectives of the project. No qualification of the data is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target analytes detected below the reporting limit but above the method detection limit, and/or when target analytes were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Organic analyses samples that contained concentrations of target analytes at a reportable level in the associated method blanks were flagged by the laboratory with a “B”. If the target analyte concentration was greater than 10 times (10X) the amount in any blank for the common laboratory contaminants or 5 times (5X) the amount for other target compounds, the “B” qualifier was not carried forward for database input; if less than the 10X or 5X rule the “B” qualifier was replaced with a “U”. The “J” qualifier, which indicates an estimated value because the result was between the MDL and RL was carried through to the database.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of the data is 100%, with the few exceptions noted above.

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Data Usability Summary Report (DUSR)
Delphi - Dort (MI) Field Event III
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Group # A4E150183

Analytical results for the project samples were reviewed to evaluate the data usability. Data was assessed in accordance with guidance from the following Federal and/or State guidance documents:

- USEPA National Functional Guidelines for Organic Data Review (EPA 540/R-99/008)

and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996.

This DUSR pertains to the following samples:

Sample ID
0916-051504-0001
MW4648-051504-1130

Project Samples were analyzed according to the following analytical methods:

	Parameter	Analytical Method	Holding Time Criteria
1.	Volatile Organic Compounds by GC/MS (preserved) (water/soil)	SW846 8260B	7 Days/14 Days

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- Holding Times
- GC/MS Instrument Performance Check
- Initial Calibration Procedures
- Continuing Calibration Procedures
- Blank Sample Analysis
- System Monitoring Compound Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Internal Standard Recoveries
- Sample Data Reporting Format
- Data Qualifiers
- Summary

Preservation and Holding Times

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group. No qualification of the data is recommended.

GC/MS Instrument Performance Check

GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. No qualification of the data is recommended.

Initial Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols. No Qualification of the data is recommended.

Continuing Calibration Procedures

Continuing calibration verification (CCV) procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of VOCs (SW846 8260B), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 25% and/or a RRF less than 0.05:

Inst.	Date / Time	Target Analyte(s)	%D	RRF	Affected Sample(s)	Corrective Action
7	05/23/04 0600	Acetone	36.8	0.17165	0916-051504-0001	See Action #1 Below
		Carbon disulfide	28.3	0.87434	MW4648-051504-1130	See Action #1 Below
		Methylene chloride	40.6	50		See Action #1 Below
		2-Hexanone	33.5	0.35748		See Action #1 Below
		1,2,4-Trichlorobenzene	31.1	50		See Action #1 Below

Action #1
Positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated detection limit.

Blank Sample Analysis

In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for metals and the common organic laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds. Target compounds were not detected in associated blank samples (trip, equipment, method) prepared and analyzed concurrently with the project samples, with the following exception(s):

Blank	Target Analyte(s)	Concn.	Affected Sample(s)	Flag sample results with a "U" if < to this value
0916-051504-0001 Trip Blank	1,1-Dichloroethene	0.36 ug/L	MW4648-051504-1130	1.8 ug/L
Method Blank I7, 05/23/04, 07:36	Methylene chloride	1.3 ug/L	0916-051504-0001 MW4648-051504-1130	13 ug/L

System Monitoring Compound Recoveries

System monitoring/surrogate compounds are added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C, and/or 8082 to confirm the efficiency of the sample preparation procedure. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. The calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts required dilution prior to analysis to either improve instrument performance by minimizing matrix interference or enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. No qualification of the data is recommended.

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS/MSD and LCS analyses fell within the laboratory QA acceptance criteria. No qualification of the data is recommended.

Internal Standard Recoveries

Internal Standard compounds were added to each sample matrix prior to the analysis of organic parameters by EPA Methods 8260B and/or 8270C to quantify the amount of the target compounds detected within each sample. The calculated response of each IS compound fell within the QA/QC criteria of +100% and – 50% of the corresponding CCV standard. No qualification of the data is recommended.

Sample Data Reporting Format

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format. The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting format is complete and compliant with the objectives of the project. No qualification of the data is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target analytes detected below the reporting limit but above the method detection limit, and/or when target analytes were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Organic analyses samples that contained concentrations of target analytes at a reportable level in the associated method blanks were flagged by the laboratory with a “B”. If the target analyte concentration was greater than 10 times (10X) the amount in any blank for the common laboratory contaminants or 5 times (5X) the amount for other target compounds, the “B” qualifier was not carried forward for database input; if less than the 10X or 5X rule the “B” qualifier was replaced with a “U”. The “J” qualifier, which indicates an estimated value because the result was between the MDL and RL was carried through to the database.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of the data is 100%, with the few exceptions noted above.

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Data Usability Summary Report (DUSR)
Delphi Dort Highway - September 2004 Sampling Event
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Group # 4H11276

Analytical results for the project samples were reviewed to evaluate the data usability. Data was assessed in accordance with guidance from the following Federal and/or State guidance documents:

- USEPA National Functional Guidelines for Inorganic Data Review (EPA 540-R-1-008)
- USEPA National Functional Guidelines for Organic Data Review (EPA 540/R-99/008)

and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996.

This DUSR pertains to the following samples:

Sample ID	Sample ID
MW4647S-081004-1507	0882-081104-0001
MW4117-081004-1555	MW4610S-081104-0840
0882-081004-0001	MW4610-081104-0940
0882-081004-0002	MW4610D-081104-
MW4118D-081004-	MW4608D-081104-
MW4647M-081104-	0882-081104-0002
0943-081104-0001	MW4010-081104-1320
MW4647D-081104-	MW4009D-081104-
0943-081104-0002	MW4606D-081104-
MW4631M-081104-	
MW4631D-081104-	
MW4630M-081104-	
0943-081104-0003	

Project Samples were analyzed according to the following analytical methods:

	Parameter	Analytical Method	Holding Time Criteria
1.	Volatile Organic Compounds by GC/MS (preserved) (water/soil)	SW846 8260B	7 Days/14 Days
2.	Semi-volatile Organic Compounds by GC/MS (water/soil)	SW846 8270C	7/14 Days Ext./40 Days Post Ext.
3.	Trace Inductively Coupled Plasma Metals	SW846 6010B/6020	6 Months
4.	Hexavalent Chromium	SW846 7196A	24 Hours
5.	Mercury in Liquid Waste (Manual Cold Vapor)	SW846 7470A	28 Days

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- Holding Times
- GC/MS Instrument Performance Check
- Initial Calibration Procedures
- Continuing Calibration Procedures
- Blank Sample Analysis
- System Monitoring Compound Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Internal Standard Recoveries
- ICP Interference Check Sample Performance
- ICP Serial Dilution Replicate Percent Difference
- Sample Data Reporting Format
- Data Qualifiers
- Summary

Preservation and Holding Times

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group. No qualification of the data is recommended.

GC/MS Instrument Performance Check

GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. No qualification of the data is recommended.

Initial Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of VOCs (SW846 8260B), the initial calibration standards for the following target compound(s) exhibited a percent relative standard deviation (%RSD) greater than the acceptance criteria of 30% and/or a RRF less than 0.05:

Inst.	Date / Time	Target Analyte(s)	%RSD	RRF	Affected Sample(s)	Corrective Action
10	08/12/04 1438	Trichlorofluoromethane	30.732	0.2688	MW4647M-081104- 0943-081104-0001 MW4647D-081104- 0943-081104-0002 MW4631M-081104- MW4631D-081104- MW4630M-081104- 0943-081104-0003	See Action #1 Below
11	08/16/04 1540	Acetone Cyclohexane	47.365 32.194	0.15957 0.29728	MW4647S-081004-1507 MW4117-081004-1555 0882-081004-0001 0882-081004-0002 MW4118D-081004-	See Action #1 Below See Action #1 Below

Action #1
Positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated detection limit.

During the analysis of SVOCs (SW846 8270C), the initial calibration standards for the following target compound(s) exhibited a percent relative standard deviation (%RSD) greater than the acceptance criteria of 30% and/or a RRF less than 0.05:

Inst.	Date / Time	Target Analyte(s)	%RSD	RRF	Affected Sample(s)	Corrective Action
10	08/03/04 0704	2,4-Dinitrophenol	34.985	0.13323	MW4010-081104-1320 MW4009D-081104-	See Action #1 Below

Action #1
Positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated detection limit.

Continuing Calibration Procedures

Continuing calibration verification (CCV) procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of VOCs (SW846 8260B), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 25% and/or a RRF less than 0.05:

Inst.	Date / Time	Target Analyte(s)	%D	RRF	Affected Sample(s)	Corrective Action
7	08/19/04 1101	Acetone	36.4	100	MW4610D-081104- MW4608D-081104- 0882-081104-0002 MW4009D-081104- MW4606D-081104-	See Action #1 Below
10	08/17/04 2114	Bromomethane Chloroethane Acetone	-30.4 -32 -40.9	0.13667 0.20594 100	MW4647M-081104- 0943-081104-0001 MW4647D-081104- 0943-081104-0002 MW4631M-081104- MW4631D-081104- MW4630M-081104- 0943-081104-0003	See Action #1 Below See Action #1 Below See Action #1 Below
11	08/18/04 0837	Acetone	-35.3	100	MW4647S-081004-1507 MW4117-081004-1555 0882-081004-0001 0882-081004-0002 MW4118D-081004-	See Action #1 Below

Action #1
Positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated detection limit.

During the analysis of SVOCs (SW846 8270C), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 25% and/or a RRL less than 0.05:

Inst.	Date / Time	Target Analyte(s)	%D	RRF	Affected Sample(s)	Corrective Action
10	08/16/04 1104	N-Nitrosodiphenylamine	-29.57206	1.18176	MW4010-081104-1320 MW4009D-081104-	See Action #1 Below

Action #1
Positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated detection limit.

Blank Sample Analysis

In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for metals and the common organic laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds. Target compounds were not detected in associated blank samples (trip, equipment, method) prepared and analyzed concurrently with the project samples, with the following exception(s):

Blank	Target Analyte(s)	Concn.	Affected Sample(s)	Flag sample results with a "U" if < to this value
0882-081004-0002 (Trip Blank)	Methylene chloride	0.7 ug/L	MW4647S-081004-1507 MW4117-081004-1555 0882-081004-0001 MW4118D-081004-	7 ug/L
0943-081104-0003 (Trip Blank)	Acetone Benzene 2-Butanone	1.2 ug/L 0.22 ug/L 0.54 ug/L	MW4647M-081104- 0943-081104-0001 MW4647D-081104- 0943-081104-0002 MW4631M-081104- MW4631D-081104- MW4630M-081104-	12 ug/L 1.1 ug/L 5.4 ug/L

0882-081104-0001 (Equip. Blank)	Chloroform	0.53 ug/L	MW4610S-081104-0840 MW4610-081104-0940 MW4610D-081104- MW4608D-081104- 0882-081104-0002 MW4009D-081104- MW4606D-081104-	2.65 ug/L
0882-081104-0002 (Trip Blank)	Acetone Methylene chloride	0.97 ug/L 1.2 ug/L	0882-081104-0001 MW4610S-081104-0840 MW4610-081104-0940 MW4610D-081104- MW4608D-081104- MW4009D-081104- MW4606D-081104-	9.7 ug/L 12 ug/L
Method blank	Isopropylbenzene Methyl cyclohexane Styrene 1,2,4-Trichlorobenzene Xylene (total)	0.64 ug/L 0.81 ug/L 0.6 ug/L 1 ug/L 1.1 ug/L	MW4647S-081004-1507 MW4117-081004-1555 0882-081004-0001 0882-081004-0002 MW4118D-081004-	3.2 ug/L 4.05 ug/L 3 ug/L 5 ug/L 5.5 ug/L
Method blank	Benzene	0.38 ug/L	MW4647M-081104- 0943-081104-0001 MW4647D-081104- 0943-081104-0002 MW4631M-081104- MW4631D-081104- MW4630M-081104- 0943-081104-0003	1.9 ug/L
Method blank	Carbon disulfide	0.71 ug/L	MW4610D-081104- MW4608D-081104- 0882-081104-0002 MW4009D-081104- MW4606D-081104-	3.55 ug/L

Blank	Target Analyte(s)	Concn.	Affected Sample(s)	Flag sample results with a "U" if < to this value
Method blank	bis(2-Ethylhexyl)phthalate	1.3 ug/L	MW4010-081104-1320 MW4009D-081104-	13 ug/L

Blank	Target Analyte(s)	Concn.	Affected Sample(s)	Flag sample results with a "U" if < to this value
Method blank	Aluminum Copper Magnesium Manganese Potassium Thallium Vanadium	0.057 mg/L 0.0029 mg/L 0.052 mg/L 0.0019 mg/L 0.19 mg/L 0.0066 mg/L 0.00082 mg/L	MW4608D-081104-	0.57 mg/L 0.029 mg/L 0.52 mg/L 0.019 mg/L 1.9 mg/L 0.066 mg/L 0.0082 mg/L

System Monitoring Compound Recoveries

System monitoring/surrogate compounds are added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C, and/or 8082 to confirm the efficiency of the sample preparation procedure. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. The calculated recovery of these compounds fell within the laboratory specific

[illegible] quality control criteria. In a few instances, sample extracts required dilution prior to analysis to either improve instrument performance by minimizing matrix interference or enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. No qualification of the data is recommended.

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS/MSD and LCS analyses fell within the laboratory QA acceptance criteria, with the following exception(s):

LCS ID / Project Sample MS	Target Analyte(s)	%R Criteria	%R	Affected Sample(s)
0882-081004-0001	Trichloroethene	62 - 130	136	MW4647S-081004-1507
	Benzene	78 - 118	132	MW4117-081004-1555
	Toluene	70 - 119	135	MW4118D-081004-
	Chlorobenzene	76 - 117	126	
	1,1-Dichloroethene	62 - 130	156	

Action:

If the LCS %R is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the LCS %R is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "R". If the MS/MSD is from a project sample use the same rules as the LCS/LCSD and apply the qualifiers to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.

Internal Standard Recoveries

Internal Standard compounds were added to each sample matrix prior to the analysis of organic parameters by EPA Methods 8260B and/or 8270C to quantify the amount of the target compounds detected within each sample. The calculated response of each IS compound fell within the QA/QC criteria of +100% and – 50% of the corresponding CCV standard. No qualification of the data is recommended.

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were all within the acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. No qualification of the data is recommended.

ICP Serial Dilution Replicate Percent Difference

The results of the ICP Serial Dilution samples analyzed concurrently with the project samples were in accordance with the EPA QA acceptance criteria of less than 10% RPD for those target analytes with sample concentrations >50X the MDL. No qualification of the data is recommended.

Sample Data Reporting Format

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format. The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting format is complete and compliant with the objectives of the project. No qualification of the data is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target analytes detected below the reporting limit but above the method detection limit, and/or when target analytes were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Organic analyses samples that contained concentrations of target analytes at a reportable level in the associated method blanks were flagged by the laboratory with a “B”. If the target analyte concentration was greater than 10 times (10X) the amount in any blank for the common laboratory contaminants or 5 times (5X) the amount for other target compounds, the “B” qualifier was not carried forward for database input; if less than the 10X or 5X rule the “B” qualifier was replaced with a “U”. The “J” qualifier, which indicates an estimated value because the result was between the MDL and RL was carried through to the database.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of the data is 100%, with the few exceptions noted above.

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Data Usability Summary Report (DUSR)
Delphi Dort Highway - August 2004 Sampling Event
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Group # 4H13282

Analytical results for the project samples were reviewed to evaluate the data usability. Data was assessed in accordance with guidance from the following Federal and/or State guidance documents:

- USEPA National Functional Guidelines for Inorganic Data Review (EPA 540-R-1-008)
- USEPA National Functional Guidelines for Organic Data Review (EPA 540/R-99/008)

and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996.

This DUSR pertains to the following samples:

Sample ID
0882-081204-0001
MW4103-081204-0850
MW4630M2-081204-
MW4630D-081204-1125
MW4646D-081204-1245
MW4646M-081204-1335
MW4640D-081204-1540
MW4622D-081204-1740
MW4620S-081204-1115
MW4620D-081204-1210
MW4605D-081204-1400
MW4605-081204-1505

Project Samples were analyzed according to the following analytical methods:

	Parameter	Analytical Method	Holding Time Criteria
1.	VOCs	EPA 8260B	14 days
2.	ICP Metals	EPA 6010B	180 days
3.	Mercury	EPA 7470A	28 days
4.	Chromium VI (Hexavalent Chromium)	EPA 7196A/3060A	30 days

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- Holding Times
- GC/MS Instrument Performance Check
- Initial Calibration Procedures
- Continuing Calibration Procedures
- Blank Sample Analysis
- System Monitoring Compound Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Internal Standard Recoveries
- ICP Interference Check Sample Performance
- Sample Data Reporting Format
- Data Qualifiers
- Summary

Preservation and Holding Times

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group. No qualification of the data is recommended.

GC/MS Instrument Performance Check

GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. No qualification of the data is recommended.

Initial Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of VOCs (SW846 8260B), the initial calibration standards for the following target compound(s) exhibited a percent relative standard deviation (%RSD) greater than the acceptance criteria of 30% and/or a RRF less than 0.05:

Inst.	Date / Time	Target Analyte(s)	%RSD	RRF	Affected Sample(s)	Corrective Action
10	08/11/04 1849	Trichlorofluoromethane	30.732	0.26881	0882-081204-0001 MW4103-081204- MW4630M2-081204- MW4646D-081204- MW4646M-081204- MW4640D-081204- MW4622D-081204-	See Action #1 Below
11	08/24/04 0857	Acetone	43.435	0.16544	MW4630D-081204- MW4620S-081204- MW4620D-081204- MW4605D-081204- MW4605-081204-	See Action #1 Below

Action #1
Positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated detection limit.

Continuing Calibration Procedures

Continuing calibration verification (CCV) procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of VOCs (SW846 8260B), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 25% and/or a RRF less than 0.05:

Inst.	Date / Time	Target Analyte(s)	%D	RRF	Affected Sample(s)	Corrective Action
10	08/24/04 1716	2-Hexanone	27.3	0.34029	0882-081204-0001	See Action #1 Below
		Chloroethane	37.9	0.20594	MW4103-081204-	See Action #1 Below
		Acetone	94.5	100	MW4630M2-081204-	See Action #1 Below
		2-Butanone	49.6	49.6	MW4646D-081204-	See Action #1 Below
					MW4646M-081204-	
					MW4640D-081204-	
					MW4622D-081204-	
11	08/24/04 0752	Bromomethane	-30.3	50	MW4620S-081204-	See Action #1 Below
		Carbon disulfide	39.2	0.76841	MW4620D-081204-	See Action #1 Below
					MW4605D-081204-	
					MW4605-081204-	
11	08/26/04 0803	Dichlorodifluoromethane	-26.3	50	MW4630D-081204-	See Action #1 Below
		Chloroethane	30.8	0.16544		See Action #1 Below
		Acetone	36.8	100		See Action #1 Below
		Carbon disulfide	32.4	0.76841		See Action #1 Below
		Carbon tetrachloride	41.9	0.19341		See Action #1 Below
		Bromoform	26	0.17047		See Action #1 Below
		1,2,4-Trichlorobenzene	-30.1	0.49471		See Action #1 Below

Action #1
Positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated detection limit.

Blank Sample Analysis

In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for metals and the common organic laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds. Target compounds were not detected in associated blank samples (trip, equipment, method) prepared and analyzed concurrently with the project samples, with the following exception(s):

Blank	Target Analyte(s)	Concn.	Affected Sample(s)	Flag sample results with a "U" if < to this value
0882-081204-0001 (Trip blank)	Acetone Methylene chloride Toluene	1.3 ug/L 0.95 ug/L 0.18 ug/L	All Project Samples	13 ug/L 9.5 ug/L 0.9 ug/L
Method blank	Acetone Benzene Methylene chloride	2.5 ug/L 0.44 ug/L 1.6 ug/L	0882-081204-0001 MW4103-081204- MW4630M2-081204- MW4646D-081204- MW4646M-081204- MW4640D-081204- MW4622D-081204-	25 ug/L 2.2 ug/L 16 ug/L
Method blank	Acetone Isopropylbenzene Styrene	2.1 ug/L 0.54 ug/L 0.46 ug/L	MW4620S-081204- MW4620D-081204- MW4605D-081204- MW4605-081204-	21 ug/L 2.7 ug/L 2.3 ug/L

Blank	Target Analyte(s)	Concn.	Affected Sample(s)	Flag sample results with a "U" if < to this value
Method blank	Calcium Magnesium Manganese Potassium	0.37 ug/L 0.097 ug/L 0.0014 ug/L 0.24 ug/L	MW4640D-081204-	3.7 ug/L 0.97 ug/L 0.014 ug/L 2.4 ug/L

System Monitoring Compound Recoveries

System monitoring/surrogate compounds are added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C, and/or 8082 to confirm the efficiency of the sample preparation procedure. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. The calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts required dilution prior to analysis to either improve instrument performance by minimizing matrix interference or enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. No qualification of the data is recommended.

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS/MSD and LCS analyses fell within the laboratory QA acceptance criteria. No qualification of the data is recommended.

Internal Standard Recoveries

Internal Standard compounds were added to each sample matrix prior to the analysis of organic parameters by EPA Methods 8260B and/or 8270C to quantify the amount of the target compounds detected within each sample. The calculated response of each IS compound fell within the QA/QC criteria of +100% and – 50% of the corresponding CCV standard. No qualification of the data is recommended.

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were all within the acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. No qualification of the data is recommended.

Sample Data Reporting Format

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format. The data package has been reviewed for

completeness and found to contain each required sample result and associated QA/QC report form. The reporting format is complete and compliant with the objectives of the project. No qualification of the data is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target analytes detected below the reporting limit but above the method detection limit, and/or when target analytes were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Organic analyses samples that contained concentrations of target analytes at a reportable level in the associated method blanks were flagged by the laboratory with a “B”. If the target analyte concentration was greater than 10 times (10X) the amount in any blank for the common laboratory contaminants or 5 times (5X) the amount for other target compounds, the “B” qualifier was not carried forward for database input; if less than the 10X or 5X rule the “B” qualifier was replaced with a “U”. The “J” qualifier, which indicates an estimated value because the result was between the MDL and RL was carried through to the database.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of the data is 100%, with the few exceptions noted above.

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Data Usability Summary Report (DUSR)
Delphi Dort Highway - August 2004 Sampling Event
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Group # A4I230127

Analytical results for the project samples were reviewed to evaluate the data usability. Data was assessed in accordance with guidance from the following Federal and/or State guidance documents:

- USEPA National Functional Guidelines for Organic Data Review (EPA 540/R-99/008)

and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996.

This DUSR pertains to the following samples:

Sample ID
0943-092204-0001
MW4622D-092204-

Project Samples were analyzed according to the following analytical methods:

	Parameter	Analytical Method	Holding Time Criteria
1.	VOCs	EPA 8260B/624	14 days

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- Holding Times
- GC/MS Instrument Performance Check
- Initial Calibration Procedures
- Continuing Calibration Procedures
- Blank Sample Analysis
- System Monitoring Compound Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Internal Standard Recoveries
- Sample Data Reporting Format
- Data Qualifiers
- Summary

Preservation and Holding Times

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group. No qualification of the data is recommended.

GC/MS Instrument Performance Check

GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. No qualification of the data is recommended.

Initial Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of VOCs (SW846 8260B), the initial calibration standards for the following target compound(s) exhibited a percent relative standard deviation (%RSD) greater than the acceptance criteria of 30% and/or a RRF less than 0.05:

Inst.	Date / Time	Target Analyte(s)	%RSD	RRF	Affected Sample(s)	Corrective Action
11	09/14/04 1657	Methylene chloride	44.272	0.42472	0943-092204-0001 MW4622D-092204-	See Action #1 Below

Action #1
Positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated detection limit.

Continuing Calibration Procedures

Continuing calibration verification (CCV) procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of VOCs (SW846 8260B), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 25% and/or a RRF less than 0.05:

Inst.	Date / Time	Target Analyte(s)	%D	RRF	Affected Sample(s)	Corrective Action
11	09/23/04 0927	1,2,4-Trichlorobenzene	-30.6	0.5775	0943-092204-0001 MW4622D-092204-	See Action #1 Below

Action #1
Positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated detection limit.

Blank Sample Analysis

In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for metals and the common organic laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds. Target analytes were not detected in associated blank samples (trip, equipment, method) prepared and analyzed concurrently with the project samples. No qualification of the data is recommended.

System Monitoring Compound Recoveries

System monitoring/surrogate compounds are added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C, and/or 8082 to confirm the efficiency of the sample preparation procedure. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. The calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts required dilution prior to analysis to either improve instrument performance by minimizing matrix interference or enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. No qualification of the data is recommended.

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS/MSD and LCS analyses fell within the laboratory QA acceptance criteria. No qualification of the data is recommended.

Internal Standard Recoveries

Internal Standard compounds were added to each sample matrix prior to the analysis of organic parameters by EPA Methods 8260B and/or 8270C to quantify the amount of the target compounds detected within each sample. The calculated response of each IS compound fell

within the QA/QC criteria of +100% and – 50% of the corresponding CCV standard. No qualification of the data is recommended.

Sample Data Reporting Format

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format. The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting format is complete and compliant with the objectives of the project. No qualification of the data is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target analytes detected below the reporting limit but above the method detection limit, and/or when target analytes were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Organic analyses samples that contained concentrations of target analytes at a reportable level in the associated method blanks were flagged by the laboratory with a “B”. If the target analyte concentration was greater than 10 times (10X) the amount in any blank for the common laboratory contaminants or 5 times (5X) the amount for other target compounds, the “B” qualifier was not carried forward for database input; if less than the 10X or 5X rule the “B” qualifier was replaced with a “U”. The “J” qualifier, which indicates an estimated value because the result was between the MDL and RL was carried through to the database.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of the data is 100%, with the few exceptions noted above.

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Data Usability Summary Report (DUSR)
Delphi - Dort Highway - February 2005 Sampling Event
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Group # 5B09295

Analytical results for the project samples were reviewed to evaluate the data usability. Data was assessed in accordance with guidance from the following Federal and/or State guidance documents:

- USEPA National Functional Guidelines for Inorganic Data Review (EPA 540-R-1-008)
- USEPA National Functional Guidelines for Organic Data Review (EPA 540/R-99/008)

and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996.

This DUSR pertains to the following samples:

Sample ID	Sample ID
0894-020705-0001	0894-020705-0003
B4HW1-020705-1135	B4HW6-020705-1600
0894-020705-0002	B4HW6-020705-1630
B4HW1-020705-1145	0894-020805-0001
B4HW1-020705-1200	B4HW9-020805-0830
B4HW2-020705-1305	B4HW9-020805-0845
B4HW2-020705-1320	B4HW8-020805-0850
B4HW4-020705-1345	
B4HW4-020705-1410	
B4HW3-020705-1430	
B4HW3-020705-1445	
B4HW5-020705-1520	
B4HW5-020705-1540	

Project Samples were analyzed according to the following analytical methods:

	Parameter	Analytical Method	Holding Time Criteria
1.	VOCs	EPA 8260B	14 days
2.	Percent Solids	MCAWW 160.3 MOD	N/A

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- Holding Times
- GC/MS Instrument Performance Check
- Initial Calibration Procedures
- Continuing Calibration Procedures
- Blank Sample Analysis
- System Monitoring Compound Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Internal Standard Recoveries
- Duplicate Sample Analysis
- Sample Data Reporting Format
- Data Qualifiers
- Summary

Preservation and Holding Times

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group. No qualification of the data is recommended.

GC/MS Instrument Performance Check

GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. No qualification of the data is recommended.

Initial Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of VOCs (SW846 8260B), the initial calibration standards for the following target compound(s) exhibited a percent relative standard deviation (%RSD) greater than the acceptance criteria of 30% and/or a RRF less than 0.05:

Inst.	Date / Time	Target Analyte(s)	%RSD	RRF	Affected Sample(s)	Corrective Action
11	02/14/05 1400	Acetone	38.881	0.11662	0894-020705-0001 0894-020805-0001	See Action #1 Below
12	02/19/05 2052	Dichlorodifluoromethane	32.433	0.26264	B4HW1-020705-1135	See Action #1 Below
		Acetone	63.605	0.27806	0894-020705-0002	See Action #1 Below
		Methylene chloride	86.229	1.01966	B4HW1-020705-1145	See Action #1 Below
		2-Hexanone	34.199	0.2516	B4HW1-020705-1200	See Action #1 Below
		Styrene	31.901	0.85783	B4HW2-020705-1305	See Action #1 Below
		Chloroethane	31.041	0.35018	B4HW2-020705-1320	See Action #1 Below
					B4HW4-020705-1345	
					B4HW4-020705-1410	
					B4HW3-020705-1430	
					B4HW3-020705-1445	
					B4HW5-020705-1520	
					B4HW5-020705-1540	
					0894-020705-0003	
					B4HW6-020705-1600	
					B4HW6-020705-1630	
					B4HW9-020805-0830	
					B4HW9-020805-0845	
					B4HW8-020805-0850	

Action #1
Positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated detection limit.

Continuing Calibration Procedures

Continuing calibration verification (CCV) procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of VOCs (SW846 8260B), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 25% and/or a RRF less than 0.05:

Inst.	Date / Time	Target Analyte(s)	%D	RRF	Affected Sample(s)	Corrective Action
12	02/14/05 1537	Dichlorodifluoromethane	-42.0677	50	B4HW1-020705-1135	See Action #1 Below
		Methylene chloride	33.85158	50	0894-020705-0002	See Action #1 Below
					B4HW1-020705-1145	
					B4HW1-020705-1200	
					B4HW2-020705-1305	
					B4HW2-020705-1320	
					B4HW4-020705-1345	
					B4HW4-020705-1410	
					B4HW3-020705-1430	
					B4HW3-020705-1445	

					B4HW5-020705-1520 B4HW5-020705-1540 0894-020705-0003 B4HW6-020705-1600 B4HW6-020705-1630	
12	02/15/05 1425	Dichlorodifluoromethane Methylene chloride 2-Butanone	-50.16892 39.33723 -28.14753	50 50 0.20115	B4HW9-020805-0830 B4HW9-020805-0845 B4HW8-020805-0850	See Action #1 Below See Action #1 Below See Action #1 Below

Action #1
Positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated detection limit.

Blank Sample Analysis

In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for metals and the common organic laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds. Target compounds were not detected in associated blank samples (trip, equipment, method) prepared and analyzed concurrently with the project samples, with the following exception(s):

Blank	Target Analyte(s)	Concn.	Affected Sample(s)	Flag sample results with a "U" if < to this value
0894-020705-0001 Trip blank	Chloroform 4-Methyl-2-pentanone	0.19 ug/L 0.37 ug/L	B4HW1-020705-1135 0894-020705-0002 B4HW1-020705-1145 B4HW1-020705-1200 B4HW2-020705-1305 B4HW2-020705-1320 B4HW4-020705-1345 B4HW4-020705-1410 B4HW3-020705-1430 B4HW3-020705-1445 B4HW5-020705-1520 B4HW5-020705-1540 0894-020705-0003 B4HW6-020705-1600 B4HW6-020705-1630	0.95 ug/L 1.85 ug/L
0894-020805-0001 Trip blank	Chloroform	0.17 ug/L	B4HW9-020805-0830 B4HW9-020805-0845 B4HW8-020805-0850	0.85 ug/L
Method blank	Acetone Benzene	0.88 ug/L 0.24 ug/L	0894-020705-0001 0894-020805-0001	8.8 ug/L 1.2 ug/L
Method blank	Acetone 2-Butanone	160 ug/kg 50 ug/kg	B4HW1-020705-1135 0894-020705-0002 B4HW1-020705-1145 B4HW1-020705-1200 B4HW2-020705-1305 B4HW2-020705-1320 B4HW4-020705-1345 B4HW4-020705-1410 B4HW3-020705-1430 B4HW3-020705-1445 B4HW5-020705-1520 B4HW5-020705-1540 0894-020705-0003 B4HW6-020705-1600 B4HW6-020705-1630	1600 ug/kg 500 ug/kg

Method blank	Acetone	170 ug/kg	B4HW9-020805-0830	1700 ug/kg
	2-Butanone	52 ug/kg	B4HW9-020805-0845	520 ug/kg
	Xylenes	37 ug/kg	B4HW8-020805-0850	185 ug/kg

System Monitoring Compound Recoveries

System monitoring/surrogate compounds are added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C, and/or 8082 to confirm the efficiency of the sample preparation procedure. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. The calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts required dilution prior to analysis to either improve instrument performance by minimizing matrix interference or enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. No qualification of the data is recommended.

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS/MSD and LCS analyses fell within the laboratory QA acceptance criteria. No qualification of the data is recommended.

Internal Standard Recoveries

Internal Standard compounds were added to each sample matrix prior to the analysis of organic parameters by EPA Methods 8260B and/or 8270C to quantify the amount of the target compounds detected within each sample. The calculated response of each IS compound fell within the QA/QC criteria of +100% and – 50% of the corresponding CCV standard. No qualification of the data is recommended.

Duplicate Sample Analysis

The replicate percent difference (RPD) was evaluated for each duplicate sample pair to monitor the reproducibility of the data. The RPD for each sample pair was within the QA/QC limit of 30% for aqueous samples and 50% for solid matrices, for those target analytes with sample concentrations >5X the MDL. No qualification of the data is recommended.

Sample Data Reporting Format

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format. The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting format is complete and compliant with the objectives of the project. No qualification of the data is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target analytes detected below the reporting limit but above the method detection limit, and/or when target analytes were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Organic analyses samples that contained concentrations of target analytes at a reportable level in the associated method blanks were flagged by the laboratory with a “B”. If the target analyte concentration was greater than 10 times (10X) the amount in any blank for the common laboratory contaminants or 5 times (5X) the amount for other target compounds, the “B” qualifier was not carried forward for database input; if less than the 10X or 5X rule the “B” qualifier was replaced with a “U”. The “J” qualifier, which indicates an estimated value because the result was between the MDL and RL was carried through to the database.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of the data is 100%, with the few exceptions noted above.

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Data Usability Summary Report (DUSR)
Delphi - Dort Highway - February 2005 Sampling Event
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Group # 5B09309

Analytical results for the project samples were reviewed to evaluate the data usability. Data was assessed in accordance with guidance from the following Federal and/or State guidance documents:

- USEPA National Functional Guidelines for Inorganic Data Review (EPA 540-R-1-008)
- USEPA National Functional Guidelines for Organic Data Review (EPA 540/R-99/008)

and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996.

This DUSR pertains to the following samples:

Sample ID	Sample ID
B4HW8-020805-0910	MW4123-021005-1000
B4HW7-020805-0925	MW4123-021005-1030
B4HW7-020805-0935	0763-021005-0001
B4HW7-020805-0945	MW4124-021005-1445
STW4001-020805-1115	MW4124-021005-1530
STW4002-020805-1145	0763-021005-0002
0894-020805-0002	0894-020805-0001
0894-020905-0001	
MW4122-020905-0950	
0894-020905-0002	
MW4102-020905-1215	
MW4103-020905-1515	
MW4104-020905-1700	

Project Samples were analyzed according to the following analytical methods:

	Parameter	Analytical Method	Holding Time Criteria
1.	VOCs	EPA 8260B	14 days
2.	Percent Solids	MCAWW 160.3 MOD	28 days

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- Holding Times
- GC/MS Instrument Performance Check
- Initial Calibration Procedures
- Continuing Calibration Procedures
- Blank Sample Analysis
- System Monitoring Compound Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Internal Standard Recoveries
- Duplicate Sample Analysis
- Sample Data Reporting Format
- Data Qualifiers
- Summary

Preservation and Holding Times

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group. No qualification of the data is recommended.

GC/MS Instrument Performance Check

GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. No qualification of the data is recommended.

Initial Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of VOCs (SW846 8260B), the initial calibration standards for the following target compound(s) exhibited a percent relative standard deviation (%RSD) greater than the acceptance criteria of 30% and/or a RRF less than 0.05:

Inst.	Date / Time	Target Analyte(s)	%RSD	RRF	Affected Sample(s)	Corrective Action
10	01/24/05 2150	Acetone	46.424	0.11981	0894-020905-0001	See Action #1 Below
		Methylene chloride	68.782	0.48823	MW4122-020905-0950	See Action #1 Below
					0894-020905-0002	
					MW4102-020905-1215	
					MW4103-020905-1515	
					MW4104-020905-1700	
11	02/14/05 1400	Acetone	38.881	0.11662	STW4001-020805-1115	See Action #1 Below
					STW4002-020805-1145	
11	02/15/05 1039	Acetone	38.881	0.11662	0894-020805-0002	See Action #1 Below
		1,2-Dibromo-3-chloropropane	-34.40102	50		See Action #1 Below
12	02/19/05 2052	Dichlorodifluoromethane	32.433	0.26264	B4HW8-020805-0910	See Action #1 Below
		Chloroethane	31.04	0.35018	B4HW7-020805-0925	See Action #1 Below
		Acetone	63.605	0.27806	B4HW7-020805-0935	See Action #1 Below
		Methylene chloride	86.229	1.01966	B4HW7-020805-0945	See Action #1 Below
		2-Hexanone	34.199	0.2516	MW4123-021005-1000	See Action #1 Below
		Styrene	31.901	0.85783	MW4123-021005-1030	See Action #1 Below
					MW4124-021005-1445	
					MW4124-021005-1530	
					0763-021005-0002	

Action #1
Positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated detection limit.

Continuing Calibration Procedures

Continuing calibration verification (CCV) procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of VOCs (SW846 8260B), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 25% and/or a RRF less than 0.05:

Inst.	Date / Time	Target Analyte(s)	%D	RRF	Affected Sample(s)	Corrective Action
10	02/15/05 1000	Dichlorodifluoromethane	-31.77546	0.13764	0894-020905-0001	See Action #1 Below
		Acetone	30.00348	100	MW4122-020905-0950	See Action #1 Below
		Methylene chloride	43.58508	50	0894-020905-0002	See Action #1 Below
					MW4102-020905-1215	
					MW4103-020905-1515	
					MW4104-020905-1700	
11	02/15/05 0804	Bromoform	-66.55432	50	0763-021005-0001	See Action #1 Below
		1,2-Dibromo-3-chloropropane	-34.40102	50	0894-020805-0002	See Action #1 Below
11	02/16/05 0815	Bromoform	-53.15459	50	0763-021005-0001	See Action #1 Below
		1,2-Dibromo-3-chloropropane	-26.3154	50		See Action #1 Below
		2-Hexanone	26.24317	0.21887		See Action #1 Below

12	02/15/05 0459	Methylene chloride Dichlorodifluoromethane 2-Butanone	36.43347 -33.78318 -32.63982	50 50 0.20115	B4HW7-020805-0925 B4HW7-020805-0935	See Action #1 Below See Action #1 Below See Action #1 Below
12	02/15/05 1425	Methylene chloride 2-Butanone Dichlorodifluoromethane	39.3 28.14753 -50.1689	50 0.20115 50	B4HW8-020805-0910 B4HW7-020805-0945 MW4123-021005-1000 MW4123-021005-1030 MW4124-021005-1445 MW4124-021005-1530 0763-021005-0002	See Action #1 Below See Action #1 Below See Action #1 Below

Action #1
Positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated detection limit.

Blank Sample Analysis

In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for metals and the common organic laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds. Target compounds were not detected in associated blank samples (trip, equipment, method) prepared and analyzed concurrently with the project samples, with the following exception(s):

Blank	Target Analyte(s)	Concn.	Affected Sample(s)	Flag sample results with a "U" if < to this value
Trip Blank (Included in SDG# 5B09295) 0894-020805-0001	Chloroform	0.17 ug/L	B4HW8-020805-0910 B4HW7-020805-0925 B4HW7-020805-0935 B4HW7-020805-0945 STW4001-020805-1115 STW4002-020805-1145 0894-020805-0002	0.85 ug/L
0894-020805-0002 Equipment Blank	Benzene	0.24 ug/L	B4HW8-020805-0910 B4HW7-020805-0925 B4HW7-020805-0935 B4HW7-020805-0945 STW4001-020805-1115 STW4002-020805-1145	1.2 ug/L
Method blank	Acetone Benzene	0.88 ug/L 0.24 ug/L	STW4001-020805-1115 STW4002-020805-1145	8.8 ug/L 1.2 ug/L
Method blank	Acetone 2-Butanone Xylenes	170 ug/kg 52 ug/kg 37 ug/kg	B4HW7-020805-0925 B4HW7-020805-0935	1700 ug/kg 520 ug/kg 185 ug/kg
Method blank	Benzene	0.25 ug/L	0894-020805-0002	1.25 ug/L

System Monitoring Compound Recoveries

System monitoring/surrogate compounds are added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C, and/or 8082 to confirm the efficiency of the sample preparation procedure. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. The calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts required dilution prior to analysis to either improve instrument performance by minimizing matrix interference or enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. No qualification of the data is recommended.

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS/MSD and LCS analyses fell within the laboratory QA acceptance criteria. No qualification of the data is recommended.

Internal Standard Recoveries

Internal Standard compounds were added to each sample matrix prior to the analysis of organic parameters by EPA Methods 8260B and/or 8270C to quantify the amount of the target compounds detected within each sample. The calculated response of each IS compound fell within the QA/QC criteria of +100% and – 50% of the corresponding CCV standard. No qualification of the data is recommended.

Duplicate Sample Analysis

The replicate percent difference (RPD) was evaluated for each duplicate sample pair to monitor the reproducibility of the data. The RPD for each sample pair was within the QA/QC limit of 30% for aqueous samples and 50% for solid matrices, for those target analytes with sample concentrations >5X the MDL. No qualification of the data is recommended.

Sample Data Reporting Format

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format. The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting format is complete and compliant with the objectives of the project. No qualification of the data is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target analytes detected below the reporting limit but above the method detection limit, and/or when target analytes were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Organic analyses samples that contained concentrations of target analytes at a reportable level in the associated method blanks were flagged by the laboratory with a “B”. If the target analyte concentration was greater than 10 times (10X) the amount in any blank for the common laboratory contaminants or 5 times (5X) the amount for other target compounds, the “B” qualifier was not carried forward for database input; if less than the 10X or 5X rule the “B” qualifier was replaced with a “U”. The “J” qualifier, which indicates an estimated value because the result was between the MDL and RL was carried through to the database.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of the data is 100%, with the few exceptions noted above.

G:\49017\Laboratory\Data Validation\Feb_2005\[SDG#5B09309_jkn.xls]Final Report

Data Usability Summary Report (DUSR)
Delphi-Dort (MI)
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Group # 5B11287

Analytical results for the project samples were reviewed to evaluate the data usability. Data was assessed in accordance with guidance from the following Federal and/or State guidance documents:

- USEPA National Functional Guidelines for Organic Data Review (EPA 540/R-99/008)

and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996.

This DUSR pertains to the following samples:

Sample ID	Sample ID
0894-021005-0001	MW4123-021505-1000
MW4101-021005-0945	0894-021705-0001
0894-021005-0002	MW4124-021705-1400
MW4110-021005-1130	
0894-021005-0003	
MW4664D-021005-1305	
MW4664M-021005-1430	
MW4630M2-021405-1100	
0894-021405-0001	
0894-021405-0002	
MW4106-021405-1420	
MW4111-021405-1630	
0894-021505-0001	

Project Samples were analyzed according to the following analytical methods:

	Parameter	Analytical Method	Holding Time Criteria
1.	VOCs	EPA 8260B	14 days

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- Holding Times
- GC/MS Instrument Performance Check
- Initial Calibration Procedures
- Continuing Calibration Procedures
- Blank Sample Analysis
- System Monitoring Compound Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Internal Standard Recoveries
- Sample Data Reporting Format
- Data Qualifiers
- Summary

Preservation and Holding Times

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group. No qualification of the data is recommended.

GC/MS Instrument Performance Check

GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. No qualification of the data is recommended.

Initial Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols. No Qualification of the data is recommended.

Continuing Calibration Procedures

Continuing calibration verification (CCV) procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of VOCs (SW846 8260B), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 25% and/or a RRF less than 0.05:

Inst.	Date / Time	Target Analyte(s)	%D	RRF	Affected Sample(s)	Corrective Action
7	02/17/05 0904	Dichlorodifluoromethane	25.91238	50	0894-021405-0001	See Action #1 Below
		Trichlorofluoromethane	36.19906	50	0894-021405-0002	See Action #1 Below
					MW4106-021405-1420	
7	02/22/05 0826	Dichlorodifluoromethane	55.43696	50	MW4111-021405-1630	See Action #1 Below
		Bromomethane	67.73471	0.05797		See Action #1 Below
		Chloroethane	46.22393	0.09837		See Action #1 Below
		Trichlorofluoromethane	46.89226	50		See Action #1 Below
		1,2-Dibromo-3-chloropropane	29.88651	0.12948		See Action #1 Below
		1,2,4-Trichlorobenzene	31.80914	0.69434		See Action #1 Below
10	02/14/05 0922	Methylene chloride	35.7127	50	MW4664D-021005-1305	See Action #1 Below
					MW4664M-021005-1430	
11	02/16/05 0815	2-Hexanone	26.24317	0.21887	0894-021005-0001	See Action #1 Below
		Bromoform	53.15459	50	MW4101-021005-0945	See Action #1 Below
		1,2-Dibromo-3-chloropropane	26.3154	50	0894-021005-0002	See Action #1 Below
					MW4110-021005-1130	
					0894-021005-0003	
11	02/23/05 0802	Carbon disulfide	33.16425	0.89084	0894-021705-0001	See Action #1 Below
		2-Hexanone	25.1506	0.21887	MW4124-021705-1400	See Action #1 Below
		Dibromochloromethane	26.99765	50		See Action #1 Below
		Bromoform	56.56806	50		See Action #1 Below
		1,2-Dibromo-3-chloropropane	45.15411	50		See Action #1 Below
11	02/22/05 0800	2-Butanone	30.23845	100	0894-021505-0001	See Action #1 Below
		2-Hexanone	25.70798	0.21887	MW4123-021505-1000	See Action #1 Below
		Bromoform	45.81299	50		See Action #1 Below

Action #1
Positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated detection limit.

Blank Sample Analysis

In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for metals and the common organic laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds. Target compounds were not detected in associated blank samples (trip, equipment, method) prepared and analyzed concurrently with the project samples, with the following exception(s):

Blank	Target Analyte(s)	Concn.	Affected Sample(s)	Flag sample results with a "U" if < to this value
Method Blank Prep Batch 5047092	Methylene chloride	0.42 ug/L	MW4630M2-021405-1100	4.2 ug/L
Method Blank Prep Batch 5053205	Acetone	1.9 ug/L	MW4111-021405-1630	19 ug/L
	Methylene chloride	0.48 ug/L		4.8 ug/L
	1,2,4-Trichlorobenzene	0.69 ug/L		3.45 ug/L

Method Blank Prep Batch 5054089	Benzene	0.34 ug/L	0894-021505-0001 MW4123-021505-1000	1.7 ug/L
0894-021005-0001	Methylene chloride Toluene	2.1 ug/L 0.2 ug/L	MW4101-021005-0945 0894-021005-0002 MW4110-021005-1130 0894-021005-0003 MW4664D-021005-1305 MW4664M-021005-1430	21 ug/L 1 ug/L
0894-021405-0001	Methylene chloride	0.57 ug/L	MW4630M2-021405-1100 0894-021405-0002 MW4106-021405-1420 MW4111-021405-1630	5.7 ug/L
0894-021505-0001	Acetone Chloroform	0.85 ug/L 0.17 ug/L	MW4123-021505-1000	8.5 ug/L 0.85 ug/L
0894-021705-0001	Acetone Chloroform 4-Methyl-2-pentanone	0.79 ug/L 0.18 ug/L 0.32 ug/L	MW4124-021705-1400	7.9 ug/L 0.9 ug/L 1.6 ug/L

System Monitoring Compound Recoveries

System monitoring/surrogate compounds are added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C, and/or 8082 to confirm the efficiency of the sample preparation procedure. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. The calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts required dilution prior to analysis to either improve instrument performance by minimizing matrix interference or enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. No qualification of the data is recommended.

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS/MSD and LCS analyses fell within the laboratory QA acceptance criteria. No qualification of the data is recommended.

Internal Standard Recoveries

Internal Standard compounds were added to each sample matrix prior to the analysis of organic parameters by EPA Methods 8260B and/or 8270C to quantify the amount of the target compounds detected within each sample. The calculated response of each IS compound fell within the QA/QC criteria of +100% and – 50% of the corresponding CCV standard. No qualification of the data is recommended.

Sample Data Reporting Format

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format. The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting format is complete and compliant with the objectives of the project. No qualification of the data is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target analytes detected below the reporting limit but above the method detection limit, and/or when target analytes were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Organic analyses samples that contained concentrations of target analytes at a reportable level in the associated method blanks were flagged by the laboratory with a “B”. If the target analyte concentration was greater than 10 times (10X) the amount in any blank for the common laboratory contaminants or 5 times (5X) the amount for other target compounds, the “B” qualifier was not carried forward for database input; if less than the 10X or 5X rule the “B” qualifier was replaced with a “U”. The “J” qualifier, which indicates an estimated value because the result was between the MDL and RL was carried through to the database.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of the data is 100%, with the few exceptions noted above.

G:\49017\Laboratory\Data Validation\Mar_2005\[5B11287_CTT.xls]Final Report

Data Usability Summary Report (DUSR)
Delphi-Dort (MI)
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Group # 5E04354

Analytical results for the project samples were reviewed to evaluate the data usability. Data was assessed in accordance with guidance from the following Federal and/or State guidance documents:

- USEPA National Functional Guidelines for Inorganic Data Review (EPA 540-R-04-004)

and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996.

This DUSR pertains to the following samples:

Sample ID
MW4608D-050205-

Project Samples were analyzed according to the following analytical methods:

	Parameter	Analytical Method	Holding Time Criteria
1.	ICP/MS Metals	EPA 6020/200.8	180 days

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- Holding Times
- Initial Calibration Procedures
- Continuing Calibration Procedures
- Blank Sample Analysis
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Duplicate Sample Analysis
- ICP Interference Check Sample Performance
- ICP Serial Dilution Replicate Percent Difference
- Sample Data Reporting Format
- Data Qualifiers
- Summary

Preservation and Holding Times

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group. No qualification of the data is recommended.

Initial Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols. No Qualification of the data is recommended.

Continuing Calibration Procedures

Continuing calibration verification (CCV) procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols. No Qualification of the data is recommended.

Blank Sample Analysis

In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for metals and the common organic laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds. Target analytes were not detected in associated blank samples (trip, equipment, method) prepared and analyzed concurrently with the project

samples. No qualification of the data is recommended.

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS/MSD and LCS analyses fell within the laboratory QA acceptance criteria. No qualification of the data is recommended.

Duplicate Sample Analysis

The replicate percent difference (RPD) was evaluated for each duplicate sample pair to monitor the reproducibility of the data. The RPD for each sample pair was within the QA/QC limit of 30% for aqueous samples and 50% for solid matrices, for those target analytes with sample concentrations >5X the MDL. No qualification of the data is recommended.

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were all within the acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. No qualification of the data is recommended.

ICP Serial Dilution Replicate Percent Difference

The results of the ICP Serial Dilution samples analyzed concurrently with the project samples were in accordance with the EPA QA acceptance criteria of less than 10% RPD for those target analytes with sample concentrations >50X the MDL. No qualification of the data is recommended.

Sample Data Reporting Format

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format. The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting format is complete and compliant with the objectives of the project. No qualification of the data is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target analytes detected below the reporting limit but above the method detection limit, and/or when target analytes were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Organic analyses samples that contained concentrations of target analytes at a reportable level in the associated method blanks were flagged by the laboratory with a “B”. If the target analyte concentration was greater than 10 times (10X) the amount in any blank for the common laboratory contaminants or 5 times (5X) the amount for other target compounds, the “B” qualifier was not carried forward for database input; if less than the 10X or 5X rule the “B” qualifier was replaced with a “U”. The “J” qualifier, which indicates an estimated value because the result was between the MDL and RL was carried through to the database.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of the data is 100%, with the few exceptions noted above.

G:\49017\Laboratory\Data Validation\May_2005\[5E04354_CTT.xls]Final Report

Data Usability Summary Report (DUSR)
Delphi-Flint
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Group # 5E17312

Analytical results for the project samples were reviewed to evaluate the data usability. Data was assessed in accordance with guidance from the following Federal and/or State guidance documents:

- USEPA National Functional Guidelines for Organic Data Review (EPA 540/R-99/008)

and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996.

This DUSR pertains to the following samples:

Sample ID
STW 4001
STW 4002
Trip Blank

Project Samples were analyzed according to the following analytical methods:

	Parameter	Analytical Method	Holding Time Criteria
1.	VOCs	EPA 8260B/624	14 days

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- Holding Times
- GC/MS Instrument Performance Check
- Initial Calibration Procedures
- Continuing Calibration Procedures
- Blank Sample Analysis
- System Monitoring Compound Recoveries
- Internal Standard Recoveries
- Sample Data Reporting Format
- Data Qualifiers
- Summary

Preservation and Holding Times

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group. No qualification of the data is recommended.

GC/MS Instrument Performance Check

GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. No qualification of the data is recommended.

Initial Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of VOCs (SW846 8260B), the initial calibration standards for the following target compound(s) exhibited a percent relative standard deviation (%RSD) greater than the acceptance criteria of 30% and/or a RRF less than 0.05:

Inst.	Date / Time	Target Analyte(s)	%RSD	RRF	Affected Sample(s)	Corrective Action
10	05/12/05 1311	Acetone	49.064	0.12185	STW 4001	See Action #1 Below
		Methylene chloride	30.466	0.31449	STW 4002	See Action #1 Below
					Trip Blank	

Action #1
Positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated detection limit.

Continuing Calibration Procedures

Continuing calibration verification (CCV) procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of VOCs (SW846 8260B), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 25% and/or a RRF less than 0.05:

Inst.	Date / Time	Target Analyte(s)	%D	RRF	Affected Sample(s)	Corrective Action
10	05/17/05 0036	Acetone	27.43842	100	STW 4001	See Action #1 Below
					STW 4002	

Action #1
Positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated detection limit.

Blank Sample Analysis

In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for metals and the common organic laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds. Target compounds were not detected in associated blank samples (trip, equipment, method) prepared and analyzed concurrently with the project samples, with the following exception(s):

Blank	Target Analyte(s)	Concn.	Affected Sample(s)	Flag sample results with a "U" if < to this value
Trip Blank	Methylene chloride	2 ug/L	STW 4001	20 ug/L
	Toluene	0.19 ug/L	STW 4002	0.95 ug/L

System Monitoring Compound Recoveries

System monitoring/surrogate compounds are added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C, and/or 8082 to confirm the efficiency of the sample preparation procedure. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. The calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts required dilution prior to analysis to either improve instrument performance by minimizing matrix interference or enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. No qualification of the data is recommended.

Internal Standard Recoveries

Internal Standard compounds were added to each sample matrix prior to the analysis of organic parameters by EPA Methods 8260B and/or 8270C to quantify the amount of the target compounds detected within each sample. The calculated response of each IS compound fell within the QA/QC criteria of +100% and – 50% of the corresponding CCV standard. No qualification of the data is recommended.

Sample Data Reporting Format

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format. The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting format is complete and compliant with the objectives of the project. No qualification of the data is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target analytes detected below the reporting limit but above the method detection limit, and/or when target analytes were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Organic analyses samples that contained concentrations of target analytes at a reportable level in the associated method blanks were flagged by the laboratory with a “B”. If the target analyte concentration was greater than 10 times (10X) the amount in any blank for the common laboratory contaminants or 5 times (5X) the amount for other target compounds, the “B” qualifier was not carried forward for database input; if less than the 10X or 5X rule the “B” qualifier was replaced with a “U”. The “J” qualifier, which indicates an estimated value because the result was between the MDL and RL was carried through to the database.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of the data is 100%, with the few exceptions noted above.

G:\49017\Laboratory\Data Validation\June 2005\[5E17312_SMW.xls]Final Report

Data Usability Summary Report (DUSR)
Delphi-Dort (MI)
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Sample Delivery Group # A5F300184

Analytical results for the project samples were reviewed to evaluate the data usability. Data was assessed in accordance with guidance from the following Federal and/or State guidance documents:

- USEPA National Functional Guidelines for Organic Data Review (EPA 540/R-99/008)

and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996.

This DUSR pertains to the following samples:

Sample ID
0894-062905-0001
PZ4005-062905-1005
PZ4004-062905-1100

Project Samples were analyzed according to the following analytical methods:

	Parameter	Analytical Method	Holding Time Criteria
1.	VOCs	EPA 8260B/624	14 days

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- Holding Times
- GC/MS Instrument Performance Check
- Initial Calibration Procedures
- Continuing Calibration Procedures
- Blank Sample Analysis
- System Monitoring Compound Recoveries
- Internal Standard Recoveries
- Sample Data Reporting Format
- Data Qualifiers
- Summary

Preservation and Holding Times

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group. No qualification of the data is recommended.

GC/MS Instrument Performance Check

GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. No qualification of the data is recommended.

Initial Calibration Procedures

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of VOCs (SW846 8260B), the initial calibration standards for the following target compound(s) exhibited a percent relative standard deviation (%RSD) greater than the acceptance criteria of 30% and/or a RRF less than 0.05:

Inst.	Date / Time	Target Analyte(s)	%RSD	RRF	Affected Sample(s)	Corrective Action

11	06/22/05 1558	Acetone	47.933	0.10633	0894-062905-0001	See Action #1 Below
		Methylene chloride	62.421	0.51916	PZ4004-062905-1100	See Action #1 Below
		Benzene	30.363	1.41405	PZ4005-062905-1005	See Action #1 Below

Action #1
Positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated detection limit.

Continuing Calibration Procedures

Continuing calibration verification (CCV) procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols, with the following exception(s):

During the analysis of VOCs (SW846 8260B), the continuing calibration verification (CCV) standards for the following target compound(s) exhibited a percent drift (%D) greater than the acceptance criteria of 25% and/or a RRF less than 0.05:

Inst.	Date / Time	Target Analyte(s)	%D	RRF	Affected Sample(s)	Corrective Action
11	07/08/05 0742	Chloroethane	33.31666	0.15778	0894-062905-0001	See Action #1 Below
		Trichlorofluoromethane	27.04533	0.26367	PZ4005-062905-1005	See Action #1 Below
		Carbon disulfide	25.52887	0.8369	PZ4004-062905-1100	See Action #1 Below
		1,2,4-Trichlorobenzene	36.76659	0.52483		See Action #1 Below

Action #1
Positive results are qualified "J", estimated and non-detected analytes as "UJ", estimated detection limit.

Blank Sample Analysis

In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for metals and the common organic laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds. Target compounds were not detected in associated blank samples (trip, equipment, method) prepared and analyzed concurrently with the project samples, with the following exception(s):

Blank	Target Analyte(s)	Concn.	Affected Sample(s)	Flag sample results with a "U" if < to this value
0894-062905-0001	Acetone	1.3 ug/L	PZ4005-062905-1005	13 ug/L
	2-Hexanone	0.35 ug/L	PZ4004-062905-1100	1.75 ug/L
	4-Methyl-2-pentanone	0.53 ug/L		2.65 ug/L

System Monitoring Compound Recoveries

System monitoring/surrogate compounds are added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C, and/or 8082 to confirm the efficiency of the sample preparation procedure. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. The calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts required dilution prior to analysis to either improve instrument performance by minimizing matrix interference or enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. No qualification of the data is recommended.

Internal Standard Recoveries

Internal Standard compounds were added to each sample matrix prior to the analysis of organic parameters by EPA Methods 8260B and/or 8270C to quantify the amount of the target compounds detected within each sample. The calculated response of each IS compound fell within the QA/QC criteria of +100% and – 50% of the corresponding CCV standard. No qualification of the data is recommended.

Sample Data Reporting Format

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format. The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting format is complete and compliant with the objectives of the project. No qualification of the data is recommended.

Data Qualifiers

Data qualifiers were assigned by the laboratory to the reported results to identify target analytes detected below the reporting limit but above the method detection limit, and/or when target analytes were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

Organic analyses samples that contained concentrations of target analytes at a reportable level in the associated method blanks were flagged by the laboratory with a “B”. If the target analyte concentration was greater than 10 times (10X) the amount in any blank for the common laboratory contaminants or 5 times (5X) the amount for other target compounds, the “B” qualifier was not carried forward for database input; if less than the 10X or 5X rule the “B” qualifier was replaced with a “U”. The “J” qualifier, which indicates an estimated value because the result was between the MDL and RL was carried through to the database.

Summary

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of the data is 100%, with the few exceptions noted above.

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